

DESCRIPTIONS OF LYCOSIDÆ AND OXYOPIDÆ OF PHILADELPHIA  
AND ITS VICINITY.

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The present paper is based on a study of the following collections: that in the Academy of Natural Sciences of Philadelphia, a rich collection made by Mr. Witmer Stone, which was the basis of the first contribution on Pennsylvania *Lycosidæ*, Mr. Stone's "Pennsylvania and New Jersey Spiders of the Family Lycosidæ," a small collection made by the Rev. Dr. H. C. McCook; and the author's own collection, specimens mainly from West Chester, Pa., from Philadelphia and its close vicinity. I would express my indebtedness to the Academy of Natural Sciences, and to my friend Mr. Stone in particular, for the use of its collections. The greater number of the specimens examined are from Philadelphia and from Chester county, Pa., others from various parts of Pennsylvania, from New Jersey, New York State and one from Maryland. The present contribution probably does not include all the species around Philadelphia, and much less all of Pennsylvania and New Jersey.

The figures represent the copulatory organs, drawn with great care in regard to the details, for these organs are undoubtedly of first diagnostic importance. The epigyna are frequently difficult to see clearly in all their parts; it is always necessary to denude them of the hairs to make them more discernible, and in some cases to dissect them away from the body and study them by transmitted light. The other characters of importance are the arrangement of the eyes (including the relative extent of the dorsal eye area), the relative proportions of the dimensions of the cephalothorax and its form, the relative length of the legs, and the relative length of the superior and inferior spinnerets. Form and dimensions of the abdomen are of little value. Color is quite constant in some species, but highly variable in others, and sometimes there is quite a

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<sup>1</sup> Contributions from the Zoological Laboratory of the University of Pennsylvania.

marked sexual difference in the coloration. Only sexually mature individuals have been considered.

It is very difficult to recognize the American species described by C. Koch and Walckenaer. I have examined Walckenaer's descriptions very carefully, and believe that with the exception of a very few forms, *e.g.*, *Lycosa carolinensis*, his species must be regarded as unrecognizable. Walckenaer based his descriptions on the manuscript notes and drawings of Bosc and Abbot; these drawings have never been edited, and until they are published they cannot rightly be granted any more priority rights than an unpublished description, unless we should grant manuscript drawings the value of type specimens. It would be as incorrect, in face of the generally accepted rules of nomenclature, to name species on the basis of unedited drawings as upon unedited descriptions. Hence these drawings are of no decisive importance at all until they are published, and Walckenaer's meagre verbal descriptions comprise all we know of his species. Hentz's descriptions are on the whole still less ample than Koch's and Walckenaer's, but Hentz has given figures which, in the main, are good, so that a considerable number of his species may be regarded as recognizable. It is right to be very thorough in endeavoring to recognize the species of a previous author, even when his descriptions are very scant; but when the description is so imprecise as to apply to any one of several species occurring in the locality of the specimens described, then the species based upon such a description must be considered unrecognizable and no further attention paid to it. If this rule is not followed, our nomenclature would be based upon a tissue of guesswork probabilities, and but for the date of the tenth edition of the *Systema Naturæ*, we should logically seek in some early source the names given by Adam.

The works of the writers cited are arranged together in a list at the end of the paper.

#### Family LYCOSIDÆ

*Characters of the Family.*—*Araneæ* with one pair of lung books and unpaired tracheal spiracle; with three claws on the feet, and legs in order of length generally 4, 1, 3, 2, or 4, 1, 2, 3; eyes in three rows, the first (most anterior) row of four small eyes, the second and third each of two larger eyes.

*Key to the Herein Described Genera of Lycosidae.*

- A.—Third eye-row nearly on a line with the second.
- I.—Lateral eyes of the first row about equidistant from the second row and the anterior edge of the cephalothorax, . . . . . *Ocyale*.
- II.—Lateral eyes of the first row at least twice as far from the anterior edge of the cephalothorax as from the second row, . . . . . *Dolomedes*.
- B.—Third eye-row not nearly on a line with the second.
- I.—Superior spinnerets not longer than the inferior, dorsal eye area usually considerably less than one-quarter the length of the cephalothorax, legs usually well clothed with hair, chelicera usually fully  $1\frac{1}{2}$  times the length of the head in front, . . . . . *Lycosa*.
- II.—Superior spinnerets slightly longer than the inferior, dorsal eye area fully or nearly one-quarter the length of the cephalothorax, legs slender with long spines and few hairs, chelicera not longer than  $1\frac{1}{2}$  times the height of the head in front, . . . . . *Pardosa*.
- III.—Superior spinnerets at least  $1\frac{1}{2}$  times as long as the inferior, dorsal eye area less than one-quarter the length of the cephalothorax, legs well clothed with hairs, chelicera comparatively small, . . . . . *Pirata*.

Genus **LYCOSA** Latr.

Following Simon, I have included in *Lycosa*, and not granted separate rank, the genera *Trochosa* Koch, *Arctosa* Koch and *Tarentula* Ohl. and Thor. In the species here described it is impracticable to distinguish these genera, the interrelation of them is so close and intermediate forms so difficult to classify. When genera become more difficult to distinguish than the species which compose them, it is clearest to adopt one comprehensive genus for all. The following key will aid in distinguishing the species here described:

- A.—Cephalothorax not more than 2.5 mm. in length, without a distinct median light band.
- I.—Sternum nearly twice as long as broad, . . . . . *nigra*.
- II.—Sternum nearly round, . . . . . *subblata*.
- B.—Cephalothorax 2.7–4.6 mm. in length, with a distinct median light band.
- I.—Sides of cephalothorax brownish or yellowish, sternum not darker than legs.

- 1.—Submarginal light band of cephalothorax very distinct, generally a dark annular mark on sternum, *ocreata pulchra*.
- 2.—Submarginal light band of cephalothorax indistinct, no dark markings on sternum, . . . *relucens*.
- II.—Sides of cephalothorax blackish or dark-brown, sternum darker than legs.
  - 1.—Sternum without hairs, under surface of coxæ and abdomen black, . . . *sepulchralis*.
  - 2.—Sternum with hairs, under surface of coxæ and abdomen not black.
    - (a)—Legs comparatively thick, fourth leg not four times the length of the cephalothorax, labium deep black its entire length, . . . *charonoides*.
    - (b)—Legs very slender, the fourth leg at least four times the length of the cephalothorax, labium lighter at its distal end.
      - (1)—Legs distinctly banded, dorso-median band of cephalothorax constricted at its middle, . . . *stonei*.
      - (2)—Legs not distinctly banded, dorso-median band of cephalothorax not constricted at its middle, . . . *verisimilis*.
- C.—Length of cephalothorax 5 mm. or more.
  - I.—Abdomen with a distinct broad dorso-median dark band along its entire length.
    - 1.—First leg thickest, not  $2\frac{1}{2}$  times the length of the cephalothorax, . . . *arenicola*.
    - 2.—First leg not thicker than the others, more than three times the length of the cephalothorax.
      - (a)—Sternum black, . . . *punctulata*.
      - (b)—Sternum yellow, . . . *scutulata*.
  - II.—Abdomen above without a distinct broad dorso-median dark band along its entire length.
    - 1.—Venter light without dark markings, middle eyes of first row considerably larger than the lateral, *cinerea*.
    - 2.—Venter dark or with dark markings, middle eyes of first row usually not larger than the lateral.
      - (a)—Cephalothorax not distinctly banded, or with a median band much narrower than the eye area.
        - (1)—Middle eyes of the first row smaller than the lateral, . . . *carolinensis*.
        - (2)—Middle eyes of the first row larger than the lateral.



- (2a)—Three dark bands on the venter converging toward the spinnerets, . . . . *inhonesta*.  
 (2b)—Small dark spots on the venter, no dark bands, . . . . *nidicola*.  
 (2c)—A broad transverse dark band on the venter behind the lung books, . . . . *baltimoriana*.  
 (b)—Cephalothorax with a median light band as broad anteriorly as the eye area.  
 (1)—Abdomen with a light dorso-median band enclosing a shorter dark band anteriorly, . . . . *lepida*.  
 (2)—Abdomen above with a large black spot or stripe at each antero-lateral margin.  
 (2a)—Posterior eyes largest, cephalothorax with a pair of black longitudinal bands, *nigraurata*.  
 (2b)—Eyes of second row largest, cephalothorax without black bands.  
 (a)—Abdomen below with a large blackish mark, first leg not more than  $2\frac{1}{2}$  times the length of the cephalothorax, . . . *frondicola*.  
 (β)—Abdomen below usually without a distinct blackish mark, first leg 2.9 times the length of the cephalothorax, *purelli*.

1. *Lycosa nigra* (Stone). (Pl. XXIX, fig. 1.)

*Pardosa nigra* Stone, 1890.

nec *Lycosa funerea* Hentz, Banks, 1891.

(2 ♀ ♀, types, Stone Coll., from Chester county, Pa.)

*Eyes*.—First row shorter than the second, its middle eyes higher and larger than the lateral; eyes of second row largest, less than their diameter apart; the third row widest, its eyes considerably nearer to the second row than to each other and placed upon tubercles. Dorsal eye area about one-fifth the length of the cephalothorax. All eyes relatively small.

*Form*.—Sternum about double as long as wide in one specimen, not quite so long in the other. Cephalothorax highest at the level of the dorsal groove. Chelicera fully  $1\frac{1}{3}$  times as long as the head

is high in front. Maxillæ comparatively long and slender. Legs stout and short, without very long spines.

*Dimensions*.—Length of cephalothorax 25 mm.

Length of first leg 5.5 mm.

Length of fourth leg 9 mm.

*Color*.—"Cephalothorax smooth and shining, uniform black with a reddish-brown luster, no stripes whatever. Sternum and coxæ similar, somewhat lighter. Abdomen black, indistinctly mottled with olive brown or gray, without any distinct pattern, though there is a more or less distinct light median stripe on the anterior part reaching nearly to the middle. The sides of the abdomen are black, thickly speckled with small gray dots. Beneath brownish, with no distinct markings. Mandibles and palpi shining dark reddish brown, front edge of cephalothorax, just below the first row of eyes, yellowish. Legs, femur dark shining like the cephalothorax, patella white; the first and second pairs have the other joints entirely yellowish white, the third pair are similar but with prominent black spines while the fourth pair have the tarsus banded with brown at the ends" (Stone).

*Comparisons*.—A typical *Lycosa* in form of legs, small space occupied by the eye area, and shortness of the superior spinnerets; quite distinct from any other American species.

2. *Lycosa sublata* n. sp. (Pl. XXIX, fig. 2.)

(1 ♀, type, Stone Coll., Sand Barrens, Pt. Pleasant, N. J.)

*Eyes*.—First row fully as broad as the second, lateral eyes slightly higher. Eyes of second row not quite their diameter apart. Third row slightly wider than second, its eyes about the same size as those of the second row, and about equidistant from each other and from the second row. Dorsal eye area not one-fifth the length of the cephalothorax, and the eyes relatively small.

*Form*.—Head low and sloping on the sides, length of chelicera more than twice the height of the head in front. Sternum very slightly longer than broad, nearly round. Legs stout and relatively short.

*Dimensions*.—Length of cephalothorax, 2.5 mm.

Length of abdomen, 2.5 mm.

Length of first leg, 6.3 mm.

Length of second leg, 5.9 mm.

Length of third leg, 5.9 mm.

Length of fourth leg, 9 mm.

*Color in Alcohol.*—*Cephalothorax* clear reddish-brown, shining and without hairs, a little lighter on the antero-dorsal portion but with no distinct median stripe; a narrow black marginal line; forehead yellowish; the second and third eyes on black tubercles. *Sternum* with a brown margin, otherwise yellow like the inferior surface of the coxæ. *Abdomen* above dark greenish-brown, a narrow yellow median stripe pointed at each end on the anterior half of the dorsum, and on either side of it two rows of large yellow spots converging toward the spinnerets; sides dark greenish-brown with numerous small yellow spots; venter yellow in front of and around the lung books, this yellow area ending posteriorly in a point anterior to the spinnerets, and to either side of it greenish-brown marbled with yellow. *Epigynum* reddish-brown. *Chelicera* reddish-brown; *labium* black with yellow distal end; *maxillæ* yellow. *Legs* yellow, with distinct broad brown rings on all the joints except the metatarsi.

*Comparisons.*—This species has some resemblance to *L. nigra* (Stone), but differs from the latter in epigynum, form of sternum, and coloration of abdomen and legs. The epigynum is comparatively small and simple, but evidently mature since it is distinctly elevated and dark colored.

3. *Lycosa ocreata pulchra* n. subsp. (Pl. XXIX, figs. 3, 4.)

*Lycosa ocreata* Hentz, Keyserling, 1876.

? *Lycosa ocreata* Hentz, Emerton, 1888.

*Lycosa ocreata* Hentz, Stone, 1890.

? *Lycosa ocreata* Hentz, Banks, 1892.

(Specimens from Philadelphia, York Furnace and Luzerne county, Pa.)

*Eyes.*—First row narrower than the second, lateral eyes slightly larger and lower, middle eyes nearer to each other than to the lateral. Eyes of second row largest, less than their diameter apart. Eyes of third row circular, nearly as far from second row as from each other. Dorsal eye area less than one-quarter the length of the cephalothorax.

*Form.*—Cephalothorax rather narrow in outline. Length of chelicera about  $1\frac{1}{2}$  times the height of the head in front. Sternum considerably longer than broad, pointed behind. Legs slender, rather scantily covered with hairs.

*Dimensions*.—Length of cephalothorax, ♂, 2.7 mm.; ♀, 3.3 mm.

Length of abdomen, ♂, 2.8 mm.; ♀, 5.3 mm.

Length of first leg, ♂, 8.9 mm.; ♀, 9 mm.

Length of second leg, ♂, 8 mm.; ♀, 8.5 mm.

Length of third leg, ♂, 7.3 mm.; ♀, 8 mm.

Length of fourth leg, ♂, 10 mm.; ♀, 12.5 mm.

*Color in Life*.—*Cephalothorax* in the ♀ with a broad buff median band widest at the middle and extending from the anterior eyes backward the whole length of the dorsum, and in it a short, very narrow darker line between the posterior eyes and a similar line at the dorsal groove; on each side of this band a broad dark-brown band, next a narrow buff line, then a submarginal band, composed of a single row of dark-brown spots, finally a narrow buff marginal line. *Sternum* pale yellow-brown with a darker marking in the form of a closed curve, rounded anteriorly and pointed posteriorly, the extreme margin of sternum being brownish-black. *Abdomen* above a grayish-buff, with, on the anterior half, a median brown band pointed behind, there ending at about the middle, and including a lighter band; to each side of this a rather indistinct brown band extending about to the middle, and continued toward the spinnerets as a row of about five black spots with pale spots between them; sides of abdomen a lighter ground color, with numerous short brown stripes pointing caudad and a few dark-brown spots; venter grayish-white, with two pairs of longitudinal rows of small brown spots converging toward spinnerets, the inner rows more pronounced in their anterior portions, the outer rows in their posterior portions. *Legs* yellowish, darker above, the *palpi* and *maxille* the same color, the *chelicera* darker, and the *labium* black. Superior *spinnerets* pale gray, the inferior brown.

In some females the dark stripes are lacking on the venter.

The males are very similar in coloration, but darker, particularly on the abdomen, and the tibia of the first leg is densely covered with long black hairs, resembling the arrangement of bristles on a test-tube cleaner.

*Comparisons*.—I have made a new subspecies of this Pennsylvania form on the ground of the absence, in all the numerous specimens examined, of dark annulations on the legs. Heutz both

described and figured for his *L. ocreata* dark markings on the legs. His specimens were from North Carolina. *L. rufa* Keyserling is not the ♀ of this species, as Keyserling suggested it might be.

4. *Lycosa relucens* n. sp. (Pl. XXIX, figs. 5, 6.)

(1 ♀, 2 ♂♂, types, Stone Coll., Germantown, Philadelphia.)

*Eyes*.—First row straight, its eyes of equal size, narrower than the second row. Eyes of second row largest, more than their diameter apart. Third row widest, its eyes on black tubercles and slightly nearer second row than each other. Dorsal eye area about one-fifth the length of the cephalothorax.

*Form*.—Cephalothorax pointed in front and rounded behind. Chelicera not quite  $1\frac{1}{2}$  times as long as the head is high in front. Sternum a little longer than broad. Maxillæ more than twice as long as the labium. Legs stout.

*Dimensions*.—Length of cephalothorax, ♂, 3.5 mm.; ♀, 3.4 mm.

Length of abdomen, ♂, 3 mm.; ♀, 3.2 mm.

Length of first leg, ♂, 12.2 mm.; ♀, 11 mm.

Length of second leg, ♂, 11.8 mm.; ♀, 10.5 mm.

Length of third leg, ♂, 10.1 mm.; ♀, 10.3 mm.

Length of fourth leg, ♂, 16 mm.; ♀, 14.5 mm.

*Color in Alcohol*.—*Cephalothorax* in the ♀ light yellowish-brown, eyes surrounded by black; a yellow median band, as broad as the space between the posterior eyes, extending from the second eyes to the posterior end of the thorax; extreme margin black. *Sternum* yellowish. *Abdomen* above brownish and darker than the cephalothorax, an indistinct black mark at each antero-lateral angle, a black spot at the middle point of dorsum, and indistinct blackish spots on the margins of the posterior dorsum; sides yellowish-brown with darker spots posteriorly; venter lighter, yellow, with obscure dark markings on the margins near the spinnerets. *Spinnerets* yellow. *Epigynum* very pale reddish-brown. *Chelicera* reddish-brown, with a darker line formed of blackish hairs on the anterior aspect of each. *Labium* and *maxillæ* yellow. *Legs* pale yellowish-brown without darker markings, *palpi* similarly colored.

In the ♂ the coloration is darker. *Cephalothorax* chocolate-brown; in one individual there pass from near the middle of each side of the median light band two radiating bands of the same color to the more indistinct submarginal band, one of these radi-

ating bands following the line of the cephalo-thoracic groove, the other passing latero-caudad. *Abdomen* above in the brighter individual (type) with a large black spot at each antero-lateral margin, a black spot at the centre of the dorsum from which two very narrow black lines pass forward and diverge, and on each margin of the dorsum a row of about six smaller black spots, the most posterior incompletely connected with those of the opposite side by cross lines of minute black dots; in the other ♂ these markings are very indistinct. Sides and venter as in ♀. *Legs* and *palpi* darker than in ♀.

*Comparisons.*—This form is quite similar in general appearance to *L. verisimilis* n. sp.; both have also the line of hairs on the anterior surface of the chelicera; but the genitalia of the two are quite different, and *relucens* has much stouter legs.

5. *Lycosa sepulchralis* n. sp. (Pl. XXIX, fig. 7.)

(1 ♀, type, author's collection, Woodland Cemetery, Philadelphia.)

*Eyes.*—First row very slightly broader than the second, its middle eyes slightly higher and larger than the lateral. Eyes of second row largest, more than their diameter apart. Third row slightly wider than second, its eyes nearer to the second row than to each other. Dorsal eye area only about one-sixth the length of the cephalothorax. All eyes relatively small.

*Form.*—Head rather low in front and its sides oblique. Cephalothorax very broad in front, more than three-fifths its greatest diameter, highest just behind the posterior eyes. Sternum longer than broad. Chelicera massive, their length about twice the height of the head in front. Legs short, tapering in diameter from proximal to distal end.

*Dimensions.*—Length of cephalothorax, 4.6 mm.

Length of abdomen, 6.2 mm.

Length of first leg, 12 mm.

Length of second leg, 10.8 mm.

Length of third leg, 10.4 mm.

Length of fourth leg, 15 mm.

*Color in Life.*—*Cephalothorax* black, a brown area surrounding the eye region and superior part of sides of head and forehead, this brown passing backward as a median band as broad as the eye area, constricted just anterior to the dorsal groove and forming a

narrow line on each side of this groove; a narrow marginal line of brown. *Sternum* jet-black and shining, without hairs. *Abdomen* above brown, a slightly darker indistinct median band on the anterior half, a deep-black spot at each antero-lateral margin, and on each margin of the posterior half of the dorsum a row of five small spots of white hairs, the corresponding ones of opposite sides connected by transverse lines of black; sides finely marbled with brown and gray; venter deep black including the epigynum and the region in front of the lung slits, this black area converging behind to the spinnerets and its lateral margins somewhat racemose. *Chelicera*, *labium* and *maxillæ* deep black and glistening as also the under surface of the *coxæ*; the chelicera with few hairs and with a reddish prominence at the supero-lateral angle. *Legs* shining reddish-brown except the *coxæ* which are black above and below, femora unbanded; first legs unbanded and darker than the others; distinct annulations of brown and black on the patellæ, tibiæ and tarsi of the third and fourth legs, less distinct annulations on the second legs. *Palpi* blackish-brown.

In alcohol the black on the venter shows indistinct lines of minute brown spots converging toward the spinnerets.

*Comparisons.*—This species in the form of the head is somewhat intermediate between *Trochosa* and *Tarentula*. It is very close to *Lycosa* (*Tarentula*) *modesta* (Keys.), from which it differs: (1) slightly in the form of the epigynum; (2) in the middle eyes of the first row being much less than twice as large as the lateral, and in that the eyes of the second row are separated from each other by nearly their full diameter; (3) in the black color of the sternum and *coxæ* and in different coloration of the dorsum of the abdomen. It shows also close resemblances to *L. charonoides* n. sp., particularly in the shape of the legs and the coloration of the superior surface of the abdomen; but the head is much narrower and its sides steeper in *charonoides*, and the two species differ in the form of the epigynum and in the coloration of the lower parts.

6. *Lycosa charonoides* n. sp. (Pl. XXIX, fig. 8.)

(1 ♀, type, author's collection, Woodland Cemetery, Philadelphia.)

*Eyes.*—First row narrower than the second, its lateral eyes very slightly lower and a little smaller. Eyes of the second row about  $1\frac{1}{2}$  times their diameter apart. Third row widest, its eyes as larg



as those of the second row, and about as far from them as from each other. Dorsal eye area less than one-fifth the length of the cephalothorax.

*Form*.—Chelicera not  $1\frac{1}{2}$  times the length of the head in front, sides of head comparatively steep. Sternum longer than broad. Legs stout and tapering.

*Dimensions*.—Length of cephalothorax, 4.2 mm.

Length of abdomen, 7 mm.

Length of first leg, 12.5 mm.

Length of second leg, 12 mm.

Length of third leg, 12 mm.

Length of fourth leg, 16 mm.

*Color in Life*.—*Cephalothorax* with a narrow median stripe of long buff hairs extending from the second row of eyes to the posterior end of the thorax, its anterior two-fifths divided into two by a black line; the remainder of the cephalothorax black with short brown hairs, and a few scattered long buff hairs on the posterior aspects of the sides. *Sternum* black with scattered long white hairs. *Abdomen* above lighter than cephalothorax, very dark chocolate-brown, a tuft of long buff hairs at the anterior dorso-median edge and two very short stripes of similar hairs diverging backward from this tuft, between them a median blackish mark shaped like a spearhead and terminating in a point anterior to the middle, and on the outer side of each buff stripe an indistinct blackish band; to either side of the mid-line a row of 4–5 minute spots, each composed of a few thick snow-white hairs; sides paler chocolate-brown, with numerous small white spots; venter buff with two lines of blackish color, converging from the lung books to the spinnerets, and two less distinct dark lines converging from epigynum not as far back as the spinnerets, and numerous dark small spots on the remainder of the venter. *Lung books* yellow, *epigynal* margins blackish, area around epigynum brown, *spinnerets* blackish-brown. *Chelicera* deep black, a nearly white knoblike projection at the supero-lateral angle of each. *Labium* deep black. *Maxillæ* rufous-black like the under surface of the *coxae*. *Legs* deep rufous-brown with white hairs and black spines, femora a little lighter than the other joints.

In alcohol the black of the thorax and sternum becomes a

brownish-black, and an indistinct broad, paler marginal band becomes apparent on the thorax.

*Comparisons.*—Cf. *L. sepulchralis* n. sp.

7. *Lycosa stonei* n. sp. (Pl. XXIX, figs. 9, 10.)

(Types of ♂ and ♀ in author's collection, from Philadelphia; numerous specimens from Philadelphia and its vicinity, and from West Chester, Pa.)

*Eyes.*—First row shorter than the second, its middle eyes slightly higher than the lateral. Eyes of second row largest, a little more than their diameter apart. Third row widest, its eyes nearly equidistant from each other and from the second row. Dorsal eye area nearly one-quarter the length of the cephalothorax.

*Form.*—Chelicera fully  $1\frac{1}{2}$  times as long as the head is high in front. Sternum longer than wide, rather pointed behind. Superior spinnerets longer than the inferior. Legs long and slender, with short hairs and long spines. Labium barely half the length of the maxillæ and rather conically pointed at its distal end. Cephalothorax narrow, in front less than half its greatest transverse diameter, highest at third pair of eyes. Sides of head steep.

*Dimensions.*—Length of cephalothorax, ♂, 3.1 mm.; ♀, 3.1 mm.

Length of abdomen, ♂, 3 mm.; ♀, 3.5 mm.

Length of first leg, ♂, 12.3 mm.; ♀, 10.1 mm.

Length of second leg, ♂, 11 mm.; ♀, 9.8 mm.

Length of third leg, ♂, 10.5 mm.; ♀, 9 mm.

Length of fourth leg, ♂, 14.5 mm.; ♀, 14 mm.

An unusually large ♀ has a total length of 9.5 mm.

♂. *Color in Life.*—*Cephalothorax* above glistening black, a median gray stripe (composed of long gray hairs which readily rub off) commencing anteriorly between the posterior eyes, where its width equals the distance between these eyes, and extending backward, usually with more or less of a middle constriction, to the posterior end of the thorax, where it is somewhat narrower; a few similar light hairs around the middle eyes, and a narrow line of them at the extreme margin of the thorax. *Sternum* deep black with a narrow marginal line of short gray hairs. *Abdomen* above black with a broad median band, almost the width of the dorsum and broader than the thoracal band, composed of long grayish hairs and extending to the spinnerets; sides black; venter black

but with grayish hairs, these most densely grouped on the margins of the posterior half where they compose two grayish bands. *Lung books* pale yellowish-white. *Spinnerets* dark at base and light at tips. *Chelicera* and *labium* deep black, *maxille* brownish-black. *Legs*: First leg with the coxa, femur, patella and tibia deep black, tarsus and metatarsus yellowish-brown, the tarsus with a black ring at its proximal end, short black hairs hide the claws of the metatarsus, the tibia thickly covered with long black thick hairs implanted on all sides, but most numerous dorsally and ventrally, each tibia thus resembling a black brush (but the hairs relatively not as long as in *L. ocreata pulchra*); second leg with the coxa, femur, patella and tibia black, tarsus yellowish-brown, with dark rings at the ends and one in the middle, metatarsus yellowish-brown; third and fourth legs with the coxa and femur deep black, the patella rufous-black, the tibia, tarsus and metatarsus yellowish-brown with dark rings; the distal ends of all metatarsi black. *Palpi* black, except the tarsus, which is brownish-black.

In alcohol the dorso-medial thoracic appears red, that of the abdomen brownish.

♀. *Color in Life*.—*Cephalothorax* black, a broad median band composed of long gray-buff hairs (not nearly white as in the ♂) extending from the posterior eyes to the posterior end of the thorax, broadest anteriorly where it occupies the whole space between the second and even extends a little lateral to them, filling the space between the third eyes and with a slight constriction at this point, enlarging slightly at middle and here more or less distinctly notched, narrower behind. To each side of this band the black color is hairless, but on the lower sides with rather sparsely scattered white hairs, such hairs forming also a very narrow marginal band. Sides of head, forehead and clypeus rusty black. *Sternum* a rusty dark-brown with a narrow pale margin. *Abdomen* above at base, next to pedicel, with a transverse band of black, and when the abdomen is viewed strictly from the dorsum each end of this band appears as a large black spot at an antero-lateral margin, and in some individuals these spots are continuous with those placed posteriorly; ground color of dorsum buff-brown, with large irregular spots of black on the margins converging toward the spinnerets, two pairs of these spots on the anterior half being particularly prominent, corresponding spots of opposite sides

transversely connected by angular black lines each margined posteriorly with a narrow line of white hairs, and at the middle point of each black transverse line a black spot; on the anterior half of the dorsum two small round spots, each black medially and white laterally, placed close together near the mid-line. Sides of abdomen brownish with numerous small white spots. Venter pale gray, with small black spots converging more or less as curved lines toward the spinnerets and variable in number and size. *Lung books* pale yellowish-white and very distinct. *Epigynum* rusty brown. *Labium* deep ferruginous, almost black; *chelicera* the same color on their anterior but a little paler on their posterior surface. *Maxillae* pale yellowish-brown like the ventral surface of the *coxae*. All the *legs* distinctly banded with buff and black above and below on all the joints except the metatarsi, which are yellowish-brown. *Palpi* similarly colored.

In alcohol the buff markings and thoracal stripe in the ♀ change to reddish, and the black of the cephalothorax, except around the eyes, to a deep reddish-brown.

*Comparisons.* — This beautiful small woodland species I take pleasure in naming for my friend, Mr. Witmer Stone, who was the first to monograph the Lycosids of this vicinity.

*L. stonoi* shows a marked sexual difference in coloration, more than any other of the local forms, but as I have observed the copulation and mating, there is no doubt of the specific identity of the males and females here described.

It is a very well-marked species, the thick brush of hairs on the first tibia of the ♂ being shared only by the ♂ of *L. ocreata*, while the epigynum is easily distinguished by the great breadth of its median piece. In the slenderness and great length of the legs, as well as in the size of the dorsal eye area, it resembles *Pardosa*, but in all other characters is a typical *Lycosa*.

8. *Lycosa verisimilis* n. sp. (Pl. XXIX, figs. 11, 12.)

(1 ♀, type, West Chester, Pa. 1 ♂, type, Philadelphia; author's collection).

*Eyes.* — First row shorter than second, the middle eyes slightly larger and higher and closer together than to the lateral eyes. Eyes of second row circular and fully their diameter apart. Eyes of third row oval and nearer the narrower second row than each

other. Eyes not black but clear in color. Dorsal eye area a little more than one-sixth the length of the cephalothorax.

*Form.*—Length of chelicera fully twice the height of the head in front, a line of black hairs on the anterior face of each. Sternum distinctly longer than broad. Legs long and slender with numerous fine hairs. Cephalothorax in front almost half its greatest transverse diameter, highest at middle, sides of head rather steep.

*Dimensions.*—Length of cephalothorax, ♂, 3.2 mm.; ♀, 4.2 mm.

Length of abdomen, ♂, 2.8 mm.; ♀, 4.1 mm.

Length of first leg, ♂, 9.9 mm.; ♀, 12.5 mm.

Length of second leg, ♂, 9 mm.; ♀, 11.8 mm.

Length of third leg, ♂, 9 mm.; ♀, 12.1 mm.

Length of fourth leg, ♂, 12.5 mm.; ♀, 16.7 mm.

♀, *Color in Alcohol.*—*Cephalothorax* very dark reddish-brown, eye region black, a broad buff median stripe arising between the posterior eyes, widest in its anterior third and most anteriorly containing a narrow black line, and extending caudad to the end of the thorax; and there is a much narrower, interrupted submarginal stripe. *Sternum* dark reddish-brown, with a median lighter line anteriorly. *Abdomen* above considerably lighter than cephalothorax, brown and buff as follows: a dark-brown spot at each antero-lateral margin continued backward along the lateral margin of the dorsum as a brown line anteriorly and a row of brown dots posteriorly, between these brown margins a broad dark-buff band which, on the posterior half, is broken into 4–5 transverse buff arches separated by dark-brown dots, and in the anterior half contains a spearhead-shaped black mark terminating in a black spot just behind the middle of the dorsum; sides dark-buff with numerous brown spots; venter light buff with small black spots arranged in a U-shape, the opening of the U directed cephalad and its curve just anterior to the spinnerets, while the space enclosed by it contains a few minute black dots. *Epigynum* and *spinnerets* dark reddish-brown; *lung book* and region anterior to epigynum pale brownish. *Chelicera* dark reddish-brown, almost black; *labium* blackish at base and yellow at tip; *maxille* reddish-brown, a little lighter at the distal end. *Legs* with black spines and short white hairs, reddish-brown and much lighter than the

sides of the cephalothorax, with distinct annulations on all joints except the metatarsi, the coxæ beneath pale yellowish-brown. *Palpi* colored like the legs.

♂. *Color in Alcohol*.—Much like the ♀. *Cephalothorax* a very dark reddish-brown, median band clear reddish and broadest in its anterior third, extending from middle eyes to posterior end of thorax, in its anterior third divided by a median dark line broadest anteriorly, long whitish hairs being present on each side of this dark line; the median thoracal band is widest a little anterior to the middle of the cephalothorax (where it is not quite as wide as the distance between the eyes of the third row), is there constricted and narrower posterior to this constriction; there is also a rather indistinct broad submarginal band of reddish; black bands connect the eyes of the second and third rows. *Sternum* as in ♀. *Abdomen* above dull brown with a broad pattern of lighter yellowish-brown, this pattern broadest anteriorly, narrowing toward the spinnerets and enclosing in its anterior half a darker oval mark with narrow black border; sides dull brown with paler stripings ventrally; venter light reddish-brown, a line of indistinct small dark spots on each margin, a median dark band extending from the anterior edges of the lung books anteriorly to a distance of one-fifth the length of the abdomen from the spinnerets posteriorly, this median band concave anteriorly where it has a width equaling the distance between the yellow *lung books*, and narrowed posteriorly where it ends bluntly, and to either side of this band minute yellowish spots. *Chelicera* reddish-brown, *labium* a little lighter at tip, *maxille* yellowish-brown like the *coxæ*. *Legs* clear reddish-brown, without darker rings, metatarsi a little lighter. *Palpi* colored like legs.

*Comparisons*.—A quite distinct species, resembling superficially the young of *L. frondicola* Em.

9. *Lycosa arenicola* Scudder. (Pl. XXIX, fig. 13.)

*Lycosa arenicola* Scudder, 1877.

*Lycosa nidifex* Marx, 1881.

*Lycosa nidifex* Marx, Everton, 1885.

*Lycosa arenicola* Scudder, McCook, 1888.

*Lycosa arenicola* Scudder, Marx, 1889.

*Lycosa arenicola* Scudder, Stone, 1890.

*Lycosa domifex* Hancock, 1899.

(Specimens from Cape May and Pt. Pleasant, N. J., in Stone Coll., but no mature ♂.)

*Eyes*.—First row almost as broad as the second, the centres of the lateral eyes of the first row lateral to the centres of the lateral eyes of the second rows, middle eyes larger and slightly higher. Eyes of second row largest, more than their diameter apart. Third row widest, its eyes nearer to the second row than to each other. Dorsal eye area a little more than one-sixth the length of the cephalothorax.

*Form*.—Cephalothorax very high in front, its posterior declivity very gradual and beginning anteriorly close to the posterior eyes, moderately sloping on the sides. Chelicera more than twice as long as the head is high in front, and with an elongate protuberance at the supero-lateral angle. Sternum longer than broad. First leg much thicker and stouter than the others.

*Dimensions of ♀*.—Length of cephalothorax, 10 mm.

Length of abdomen, 11 mm.

Length of first leg, 24 mm.

Length of second leg, 23 mm.

Length of third leg, 21 mm.

Length of fourth leg, 27 mm.

*Colors in Alcohol, ♀*.—*Cephalothorax* above reddish-brown to almost black, a lighter median band as broad anteriorly as the eye area extending backward and constricted just anterior to the dorsal groove, narrow around this groove, constricted more deeply just behind it and enlarging again to the posterior edge of the thorax; sides of the head sometimes as light as this band; extreme margin of thorax black. *Sternum* light-brown to blackish-brown. *Abdomen* above light to dark-brown, a median darker band extending the whole length of the dorsum, but most distinct on the posterior part, its margins posteriorly deeply pectinate; sides yellowish-brown dorso-posteriorly and with a black longitudinal band ventro-anteriorly; venter yellowish-brown to blackish with a more or less distinct darker area from epigynum to spinnerets, and a dark semicircle around the spinnerets anteriorly. *Epigynum* reddish-brown. Superior *spinnerets* lighter than the inferior. *Chelicera* deep reddish-brown to black, a reddish prominence at the supero-lateral angle. *Labium* and *maxille* reddish-brown with lighter distal ends, labium somewhat darker than the maxillæ. *Legs*: First leg darker than second, black in some individuals; second pair darker above than third and fourth, without annulations,



distal ends of tarsi and metatarsi black. *Palpi* of the same color as the posterior legs.

*Comparisons.*—Easily distinguished from all others of the genus by the great thickness of the first legs. This is a character, united with that of the great height of the cephalothorax in front, which would seem to warrant the establishment of a new genus for it.

10. *Lycosa punctulata* Hentz. (Pl. XXIX, fig. 14.)

*Lycosa punctulata* Hentz, 1841.

*Lycosa punctulata* Hentz, Emerton, 1885.

nec *Lycosa punctulata* Hentz, Stone, 1890.

*Lycosa punctulata* Hentz, Marx, 1889.

(2 mature ♀ ♀, Philadelphia, author's collection.)

*Eyes.*—First row shorter than the second, lateral eyes slightly larger and slightly lower. Second eyes almost their diameter apart, slightly larger than third eyes. Third row slightly wider than second, its eyes nearer second row than each other. Dorsal eye area not one-fifth the length of the cephalothorax.

*Form.*—Cephalothorax comparatively slender, in front highest and not quite one-half as wide as the greatest transverse diameter. Sides of head steep. Length of chelicera about  $1\frac{1}{3}$  times the height of head in front. *Sternum* a little longer than broad. Legs rather stout, thickly covered with short hairs. A prominence on the supero-lateral angle of the chelicera. Superior spinnerets about as long as the inferior.

*Dimensions.*—Length of cephalothorax, 6.8 mm

Length of abdomen, 9 mm.

Length of first leg, 19 mm.

Length of second leg, 17.2 mm.

Length of third leg, 16 mm.

Length of fourth leg, 23 mm.

*Color in Life.*—*Cephalothorax* above pale chocolate-brown, two broad, parallel black stripes on the dorsum, separated from each other by about their own width, and extending from (and embracing) the second and third eyes to the posterior margin of the thorax; a narrow buff line between the second eyes; a narrow black submarginal and a black marginal line on the thorax; region between the eyes blackish, and a narrow, short black line on each side just ventral to the dorsal eyes. *Sternum* black with pale hairs. *Abdomen* above with a broad dark-brown

median band extending the whole length of the dorsum, widest at the middle and anteriorly with a black edging on each margin of it, on each side of this median band paler grayish-brown with a rather indistinct large brownish spot at each antero-lateral margin; sides mottled with gray and reddish-brown; venter with a transverse row of three large black spots just behind the plane of the epigynum, and a blackish area extending from them and converging toward but not reaching the spinnerets, this black area bordered on each side by a line of contiguous buff dots; in the other ♀ the venter shows this blackish area in the same position, and scattered asymmetrically upon and around it about 16 deep black spots of varying size. *Epigynum* black, region about it yellowish. *Spinnerets* brown. *Chelicera* black, *maxillæ* and *labium* dark reddish-brown like the ventral surface of the *coxæ*. *Legs* light chocolate-brown without darker markings, the dorsal surface of the *coxæ* black.

*Comparisons*.—A well-defined species, agreeing with Hentz's description and figures. The specimens labeled by Stone "*punctulata*" and described as such by him are individuals of *L. scutulata* in which the dorso-median band of the abdomen is not notched posteriorly.

11. *Lycosa scutulata* Hentz. (Pl. XXIX, figs. 15, 16.)

*Lycosa scutulata* Hentz, 1841.

*Lycosa scutulata* Hentz, Emerton, 1885.

*Lycosa scutulata* Hentz, Marx, 1889.

*Lycosa scutulata* Hentz, Stone, 1890.

*Lycosa punctulata* Hentz, Stone, 1890.

*Lycosa scutulata* Hentz, Banks, 1892.

(Numerous specimens from Philadelphia, Chester county, York Furnace, Pa.; Pt. Pleasant, N. J.)

*Eyes*.—First row shorter than the second, the lateral eyes considerably lower than the middle. Eyes of second row largest, less than their diameter apart. Third row widest, its eyes nearer second row than each other. Dorsal eye area about one-fifth the length of the cephalothorax.

*Form*.—Cephalothorax narrow, in front not quite half its greatest transverse diameter, highest at the posterior eyes. Sides of head rather steep. Chelicera slightly more than  $1\frac{1}{2}$  times as long as the head is high in front. Sternum longer than broad. Legs long and rather slender.

*Dimensions.*—Length of cephalothorax, ♂, 7 mm.; ♀, 7.5 mm.

Length of abdomen, ♂, 8 mm.; ♀, 13 mm.

Length of first leg, ♂, 28 mm.; ♀, 25 mm.

Length of second leg, ♂, 25 mm.; ♀, 23 mm.

Length of third leg, ♂, 23 mm.; ♀, 20 mm.

Length of fourth leg, ♂, 33 mm.; ♀, 31 mm.

*Color in Life, ♀.* *Cephalothorax* pale grayish-buff, a brown-black broad band on each side of the mid-line enclosing in front the eyes of the corresponding side and passing back to the end of the thorax, the buff line enclosed by these stripes much narrower than them and widest posteriorly; a narrow brown-black sub-marginal line, and a black vertical stripe from each lateral eye of the first row to the ventral margin of the head in front. *Sternum* pale yellowish with a darker margin. *Abdomen* above with a black-brown broad median band extending its whole length and widest at the middle, this band generally enclosing two or three oblique brown spots anteriorly and its margins indented by brown more posteriorly (though in some individuals such indentations are not present), and margined on each side by a narrower buff band; sides streaked black-brown and buff above, paler yellow with a few dark spots below; venter grayish-white with one or two pairs of narrow, longitudinal, slightly darker lines converging from the lung books to the spinnerets. *Spinnerets* dark, *epigynum* blackish, *lung books* grayish-white. *Chelicera* pale-brown with a reddish prominence at the supero-lateral angle, and a line of darker hairs anteriorly. *Labium* a paler brown, and *maxillae* yellowish. *Legs* pale-brown, darker below than above, metatarsi of all a little darker, as also the distal ends of the tibia and tarsus of the fourth pair. *Palpi* colored like legs.

In alcohol the dark-colored stripes appear dark reddish-brown, the legs reddish, and the buff and brown of the abdomen yellowish.

*Color in Life, ♂.*—Similar to the ♀ except in following points: The anterior half of the medio-dorsal stripe of the abdomen a deep black; the first leg black on femur (almost whole extent ventrally, the distal half dorsally), patella, tibia and proximal two-thirds of the tarsus.

*Comparisons.*—A clearly marked species, easily distinguished

from *L. punctulata*, with which it has sometimes been confounded, in both form and coloration.

12. *Lycosa cinerea* (Fabr.) (Pl. XXIX, figs. 17, 18).

*Araneus cinereus* Fabricius, 1793.

*Lycosa cinerea* Fabr., Emerton, 1885.

*Lycosa lynx* Hahn, 1831.

*Lycosa halodroma* C. Koch, 1848.

*Arctosa cinerea* Idem.

*Arctosa lynx* Idem.

*Trochosa cinerea* Fabr., Marx, 1899.

*Trochosa cinerea* (Fabr.) Stone, 1890.

*Lycosa maritima* Hentz, 1841.

(Pt. Pleasant, Sea Isle, N. J.)

*Eyes*.—First row as broad as the second, or the centres of its lateral eyes more lateral than the centres of the lateral eyes of the second row, its middle eyes from  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times as large as the lateral. Eyes of second row largest, not quite their diameter apart, separated from the first row by the diameter of a lateral eye of the latter. Third row widest, its eyes a little nearer second row than each other. Dorsal eye area about one-fifth the length of the cephalothorax.

*Form*.—Cephalothorax comparatively wide, its highest point a little anterior to the dorsal groove. Head low in front, height of forehead from the dorsal margins of the second eyes less than one-half the length of the chelicera. Legs slender. Sternum longer than wide. Epigynum very small, as also the tarsal joint of the ♂ palpus. Spinnerets long.

*Dimensions* (specimens from Pt. Pleasant).—Length of cephalothorax, ♂, 6.5 mm.; ♀, 6.5 mm.

Length of abdomen, ♂, 6.6 mm.; ♀, 9.5 mm.

Length of first leg, ♂, 19 mm.; ♀, 20 mm.

Length of second leg, ♂, 18.8 mm.; ♀, 18 mm.

Length of third leg, ♂, 18.6 mm.; ♀, 18.8 mm.

Length of fourth leg, ♂, 25.7 mm.; ♀, 25.5 mm.

*Dimensions* of ♂ from Sea Isle.—Length of cephalothorax, 5 mm.

Length of abdomen, 5 mm.

Length of first leg, 15 mm.

Length of second leg, 14.8 mm.

Length of third leg, 13.9 mm.

Length of fourth leg, 20 mm.

*Color in Life* (♂ from Sea Isle).—*Cephalothorax* marked intricately with white, gray-brown and black, as follows: Head white with a short black line passing downward and backward from each posterior eye; a broad dorsal area of white margined with grayish-brown and black in interdigitating patches; sides mainly white interrupted with grayish-brown lines, the extreme margin blackish. *Sternum* pale green. *Abdomen* with a medio-dorsal stripe of gray on the anterior half interruptedly margined with black, and on each side of the mid-line extending back to the spinnerets a row of 6-7 white spots margined with black and brownish; sides above white with black spots, below entirely white; venter immaculate white, *lung books* faint yellow, *spinnerets* greenish-brown. *Che-liceræ* black with long white hairs on the anterior surface, and a pale prominence at the supero-lateral angle. *Labium* black. *Marillæ* pale brownish. *Legs* white with distinct brownish annulations and blotches on all joints except upon the brownish metatarsi, and more distinct above than below. *Palpi* colored like the legs, but the tarsi blackish. The females are colored like the males.

*Comparisons*.—The form here described is very probably the same as Hentz's *Lycosa maritima*. Whether it exactly agrees with the European *L. cinerea* I cannot decide from the descriptions of the authors, and have not had opportunity to see for myself specimens from Europe. If they should eventually prove not to be the same then Hentz's name would be applicable. Banks (1891) regards *maritima* Hentz as a synonym of *cinerea* (Fabr.).

The single ♂ I obtained at Sea Isle differs from the ♂♂ in the Stone collection from Pt. Pleasant in its much smaller size, and in that the first row of eyes is placed exactly upon the front edge of the head and not removed from it by a distance equaling the diameter of its smaller eyes. It is possible there may be two geographical varieties on the New Jersey coast.

13. *Lycosa carolinensis* Walck. (Pl. XXIX, figs. 19, 20.)

*Lycosa tarentula carolinensis* Walckenaer (Bosc. MSS.), 1837.

*Lycosa (Tarentula) carolinensis*? Bosc. M.S., Hentz, 1841.

*Lycosa carolinensis* Hentz, Emerton, 1885.

*Lycosa carolinensis* Walck., Marx, 1889.

*Lycosa carolinensis* Walck., Stone, 1890.

(Specimens from Chester county, Pa., and Essex county, N. J.)

*Eyes*.—First row almost as broad as the second, the lateral larger than the middle eyes and slightly lower. Eyes of second

row largest, circular, not quite their diameter apart. Third row wider than the second, the distance between its eyes considerably greater than the distance separating them from the second row. Dorsal eye area not more than one-sixth the length of the cephalothorax.

*Form.*—Cephalothorax highest at the posterior eyes, in front a little more than one-half its greatest transverse diameter. Sides of the head steep. Chelicera less than twice the height of the head in front, massive. Sternum longer than broad. Legs stout, thickly covered with short hairs

*Dimensions.*—Length of cephalothorax, ♂, 11 mm.; ♀, 12.5 mm.

Length of abdomen, ♂, 9 mm.; ♀, 11 mm.

Length of first leg, ♂, 36 mm.; ♀, 35 mm.

Length of second leg, ♂, 33 mm.; ♀, 32 mm.

Length of third leg, ♂, 29 mm.; ♀, 30 mm.

Length of fourth leg, ♂, 40 mm.; ♀, 40 mm.

*Color in Alcohol.* ♀.—*Cephalothorax* above dark reddish-brown without distinct markings, blackish around the eyes. *Sternum* black. *Abdomen* above dull brown, a median darker (sometimes indistinct) broad band on the anterior half, this band widest anteriorly and terminating bluntly at the middle; sides above like the dorsum, below yellowish-brown; whole venter behind the lung books black, *epigynum* reddish-brown as the spinnerets. *Chelicera* reddish-brown with black and orange hairs anteriorly and a bright red prominence at the supero-lateral angle. *Labium* and *maxillæ* black or deep reddish-brown with lighter tips. *Legs* dull reddish-brown, ventral surface of the coxæ black, and each joint with darker ends. *Palpi* reddish-brown.

*Comparisons.*—This is one of the few of Walckenaer's species which can be recognized with some certainty.

14. *Lycosa inhonesta* (Keys.). (Pl. XXIX, figs. 21, 22.)

*Tarentula inhonesta* Keyserling, 1876.

*Tarentula tigrina* McCook, 1878. (Not valid as a diagnosis.)

*Lycosa vulpina* Emerton, 1885.

*Lycosa tigrina* (McCook), Stone, 1890.

*Lycosa vulpina* Emerton, Banks, 1892.

(Several specimens of both sexes from Chester county, Pa.; 1 ♀ from Vineland, N. J., labeled in the handwriting of Dr. McCook, "*Tarentula tigrina*," may be his type.)

*Eyes*.—First row slightly wider than the second, the lateral eyes slightly lower and slightly smaller. Eyes of the second row largest, not quite their diameter apart. Third row widest, its eyes circular and farther from each other than from the second row. All eyes very small for the size of the spider. Dorsal eye area less than one-seventh the length of the cephalothorax.

*Form*.—Massive. Cephalothorax highest at the posterior eyes, in front slightly more than one-half its greatest diameter. Sides of head moderately oblique. Length of the chelicera more than twice the height of the head in front. Sternum about as broad as long. Legs stout, thickly covered with hairs.

*Dimensions*.—Length of cephalothorax, ♂, 9.2 mm.; ♀, 12.8 mm.

Length of abdomen, ♂, 8.8 mm.; ♀, 12 mm.

Length of first leg, ♂, 33 mm.; ♀, 32 mm.

Length of second leg, ♂, 31 mm.; ♀, 30.5 mm.

Length of third leg, ♂, 29 mm.; ♀, 28 mm.

Length of fourth leg, ♂, 35 mm.; ♀, 37 mm.

*Color in Alcohol*, ♀.—*Cephalothorax* above deep blackish-brown, in smaller individuals reddish-brown, a more or less distinct paler, very narrow median stripe from the middle eyes to the dorsal groove, a similar line on each side of the dorsal groove joining with its fellow to form an unpaired one posteriorly; there is also an indistinct and broader light submarginal band. *Sternum* blackish or deep brown. *Abdomen* above black in dark individuals, in light ones with a pale spot at the anterior end of the dorsum; sides somewhat lighter; venter blackish in very dark individuals, yellowish-brown in lighter ones, with generally three longitudinal black bands converging backward toward the spinnerets (each line sometimes a row of spots) and with small black spots. *Chelicera* thickly covered with black hairs. *Labium* and *maxille* black. *Legs* deep reddish-brown, blackish in dark individuals, in lighter ones clearly annulated on all the joints except the metatarsi, these annulations indistinct but discernible in dark individuals; ventral surface of coxae black in dark individuals. *Palpi* colored like the legs.

The ♂♂ are colored like the lighter ♀♀. In one ♂ the black stripes on the venter are very distinct, in another the venter shows only small black spots on a yellowish-brown ground.



*Comparisons.*—These specimens agree so closely with Keyserling's description that I have no hesitation in regarding McCook's *tigrina* and Emerton's *vulpina* as synonyms of *inhonesta*. My specimens do not agree with Keyserling's description exactly in the form of the epigynum, but that organ shows considerable variation; Keyserling also states the length of the cephalothorax to be only 8.7 mm., and does not describe any light median thoracic band. But he adds: "In meiner Sammlung besitze ich mehrere Exemplare, die angeblich aus Brasilien stammen, aber vollständig mit dieser Art übereinstimmen, sie sind nur beträchtlich grösser und haben ein ganz schmales Mittelband über den vorderen Theil des Cephalothorax, das von hellen Härchen gebildet wird und bis zur zweiten Augenreihe reicht."

This species is similar in general appearance to *L. carolinensis*, its dark individuals particularly so, but they may be readily distinguished by the relative sizes of the eyes of the first row.

15. *Lycosa nidicola* Emerton. (Pl. XXIX, figs. 23, 24.)

*Lycosa nidicola* Emerton, 1885.

*Lycosa nidicola* Emerton, Marx, 1889.

*Lycosa nidicola* Emerton, Stone, 1890.

*Lycosa nidicola* Emerton, Banks, 1892.

*Lycosa babingtoni* Blackw., Banks, 1891.

(Numerous specimens from Chester county, Lancaster county, York county, Pa.; Pt. Pleasant, N. J.)

*Eyes.*—First row nearly as broad as the second, straight or the lateral eyes slightly higher, middle eyes decidedly larger. Eyes of the second row largest, fully their diameter apart. Third row broadest, its eyes farther from each other than from the second row. Dorsal eye area about one-sixth the length of the cephalothorax.

*Form.*—Cephalothorax in front not quite one-half its greatest transverse diameter, highest at posterior eyes. Head oblique on the sides. Length of chelicera about  $1\frac{1}{2}$  times the height of the head in front. Sternum longer than broad. Legs stout, well clothed with short hairs.

*Dimensions* of specimens from Chester county, Pa.—Length of cephalothorax, ♂, 6.8 mm.; ♀, 8.6 mm.

Length of abdomen, ♂, 5 mm.; ♀, 11 mm.

Length of first leg, ♂, 24 mm.; ♀, 24 mm.

Length of second leg, ♂, 21.5 mm.; ♀, 21.5 mm.

Length of the third leg, ♂, 20 mm.; ♀, 21.5 mm.

Length of fourth leg, ♂, 27 mm.; ♀, 29 mm.

*Dimensions* of the largest of several ♀♀ in the McCook collection, from an unknown locality in Pennsylvania.—Length of cephalothorax, 9.2 mm.

Length of abdomen, 10.5 mm.

Length of first leg, 24 mm.

Length of second leg, 23 mm.

Length of third leg, 22.5 mm.

Length of fourth leg, 31 mm.

*Color in Life*, ♀.—*Cephalothorax* above black, a very narrow brownish-buff median band extending from the anterior to the posterior eye-row, and continued as a somewhat broader band backward to the end of the thorax; a broader submarginal band of the same color, and some scattered buff hairs on the sides. *Sternum* deep black. *Abdomen* above deep dusky-brown, but not as dark as the cephalothorax, a black spot at each antero-lateral margin, between these and bounding them a light V-shaped mark with its apex directed cephalad, and diverging backward from the limbs of this mark a series of indistinct small light spots, some of them connected by transverse lines of the same color; sides deep blackish with numerous short streaks of buff-brown; venter pale brown anterior to lung slits, margins of the latter and a spot at the posterior edge of the epigynum black, behind the gill slits buff-brown with numerous small black spots that become confluent at the spinnerets, the larger of them arranged mainly in three narrow lines converging toward spinnerets. Margins of *epigynum* black. *Spinnerets* reddish-brown. *Chelicera* brownish-black, a red prominence at the supero-lateral angle. *Labium* and *maxillæ* black. *Legs* brown with indistinct buff annulations on the femora, patellæ and tibiæ; ventral surface of coxæ black. *Palpi* brown like the legs, with very indistinct annulations.

The ♂♂ are colored very much like the ♀♀, but are somewhat more distinctly marked. The *cephalothorax* of one alcoholic specimen has a short narrow buff band on each side parallel to the median stripe and extending from the posterior eyes to the middle of the cephalothorax. The *sternum* has sometimes a pale median line. The *abdomen* above dark brown with a broad black median band extending to behind the middle, and a pair of marginal

bands of the same color extending to the spinnerets; the spots on the venter are often arranged very irregularly.

*Comparisons.*—A well-marked species. Banks (1891) considers it to be synonymic with *L. babingtoni* Blackw. I cannot agree with this conclusion, for though the coloration of the two is quite similar, *babingtoni* is described as having a thoracal length of two-fifths of an inch (a little more than 10 mm.), whereas the largest specimen I have seen of *nidicola* has a thoracal length of only 9.2 mm.; and in *babingtoni* the fourth leg is actually and proportionately shorter. Emerton mentions 9 mm. as the length of the cephalothorax in his specimens of *nidicola*, and presumably this is the measurement of his largest specimen. These are not great differences, but it is necessary to examine Canadian specimens of *babingtoni* before the identity of the two may be regarded as well established.

16. *Lycosa baltimoriana* (Keys.) (Pl. XXIX, fig. 25).

*Tarentula Baltimoriana* Keyserling, 1876.  
*Tarentula baltimoriana* Keys., Marx, 1889.

(1 ♂, Maryland, McCook Coll.)

*Eyes.*—First row slightly broader than the second, its lateral eyes lower and less than half as large as its middle eyes. Eyes of second row largest, not quite their diameter apart. Third row broadest, its eyes farther from each other than from the second row. Dorsal eye area less than one-sixth the length of the cephalothorax.

*Form.*—Cephalothorax low for its diameter, head broad in front, and its sides rather oblique. Length of chelicera more than double the height of the head in front. Sternum longer than broad. Legs stout and hairy.

*Dimensions.*—Length of cephalothorax, 9 mm.

Length of abdomen, 7.5 mm.

Length of first leg, 31 mm.

Length of second leg, 28.5 mm.

Length of third leg, 26 mm.

Length of fourth leg, 33 mm.

*Color in Alcohol.*—*Cephalothorax* reddish-brown, a narrow white median line in the eye area, a lighter reddish area from the eyes to the dorsal groove and from the latter in radiations to the sides, the reddish and the darker reddish-brown there intergrad-

ing, extreme margin black. *Sternum* black. *Abdomen* above light-brown with grayish-white markings that form a large spot at each antero-lateral angle, a pair of large spots just anterior to the middle, and a series of four broad, zigzag arches across the posterior dorsum; the brown forms on the anterior half of the dorsum a median band that ends posteriorly notched. Sides gray, streaked posteriorly with oblique brown stripes. Venter yellowish-gray, with a broad transverse band of deep chocolate-brown extending across its entire width and from the lung slits in front almost to the spinnerets behind. *Spinnerets* yellowish-brown. *Chelicera* deep reddish-brown with pale yellow hairs superiorly, the supero-lateral prominence also deep reddish-brown. *Labium* black, *maxillæ* a little lighter. *Legs* clear reddish-brown, tarsi and metatarsi of the first and second darker, patellæ of all legs dark-brown beneath, coxæ below nearly as dark as the patellæ, indistinct dark rings on the femora.

*Comparisons.*—This specimen agrees perfectly with Keyserling's description, except that it is a little larger.

17. *Lycosa lepida* (Keys.). (Pl. XXIX, figs. 26, 27.)

*Tarentula lepida* Keyserling, 1876.

*Lycosa communis* Emerton, 1885.

*Lycosa communis* Emerton, Marx, 1889.

*Tarentula lepida* Keys., Marx, 1889.

*Lycosa communis* Emerton, Stone, 1890.

*Lycosa communis* Emerton, Banks, 1892.

? *Lycosa lenta* Hentz, 1841.

? *Lycosa erratica* Hentz, 1841.

(Numerous specimens from Philadelphia, Chester county, York Furnace, Pa.; Pt. Pleasant, N. J.)

*Eyes.*—First row much shorter than the second, its lateral eyes slightly lower. Eyes of the second row more than their diameter apart, not larger than those of the third row. Third row widest, its eyes nearer the second row than each other. Dorsal eye area not more than one-fifth the length of the cephalothorax.

*Form.*—*Cephalothorax* narrow, in front less than one-half its greatest transverse diameter, equally high at the middle and at the third pair of eyes. *Sternum* longer than broad. *Chelicera* massive, their length nearly twice the height of the head in front. *Legs* rather slender.

*Dimensions.*—Length of cephalothorax, ♂, 5.2 mm.; ♀, 7 mm.

Length of abdomen, ♂, 5.2 mm.; ♀, 8.5 mm.

Length of first leg, ♂, 19 mm.; ♀, 19 mm.

Length of second leg, ♂, 17 mm.; ♀, 18 mm.

Length of third leg, ♂, 16.5 mm.; ♀, 17.2 mm.

Length of fourth leg, ♂, 23 mm.; ♀, 23.3 mm.

These are dimensions of unusually large individuals. In the same locality occur mature ♀♀ with a cephalothoracal length of only 5.5 mm.

*Color in Life*, ♂.—*Cephalothorax* above black, a grayish-brown median band from the posterior eyes to the end of the cephalothorax, a broader marginal band of the same color divided longitudinally in its anterior half by a black stripe, the ventral margin of the forehead and the space between the second eyes also gray; all these grayish markings are due to long hairs. *Sternum* nearly black, covered with grayish-brown hairs. *Abdomen* black on its anterior declivity, a broad light band extends on the dorsum from the anterior end nearly to the spinnerets where it ends in a point, this band buff-brown anteriorly and nearly white at its posterior end; in the anterior half of this band is a dark-brown mark edged with black and terminating bluntly at the middle of the dorsum, and on each side of the median light band is a row of large black spots; the sides are buff above and gray below; the venter nearly white with two black stripes diverging from the spinnerets forward, and each at its anterior end (just behind the lung slits) deflected mediad at a right angle so as almost to meet its fellow of the opposite side. *Spinnerets* reddish-brown, blackish at base. *Chelicera* almost black, with buff hairs anteriorly and a light prominence at the supero-lateral angle. *Labium* black. *Maxillæ* brown. *Legs* yellowish-brown with buff hairs on the femora, shorter white hairs elsewhere, the latter thickly grouped on the tarsi and metatarsi of the first and second legs. *Palpi* colored like legs.

The ♀♀ are colored somewhat less brightly than the ♂♂. The coloration is quite variable in this species. Sometimes the dark stripe included in the pale median band of the abdomen is lacking. The coloration of the venter is particularly variable; in four specimens the venter from the epigynum to the spinnerets is entirely black with no buff markings; in four others there is a pair of buff spots in the black; two others have one large buff spot in the venter; others have the black in the shape of a U on a light ground. All these colorations are found in the same locality.

*Comparisons.*—There are two of Hentz's species which may be referred with considerable uncertainty to this one, namely *lenta* and *erratica*; but in my opinion his figures, and still more his descriptions, give too inadequate a diagnosis (compare Banks, 1891).

18. *Lycosa nigraurata* n. sp. (Pl. XXX, fig. 53.)

(1 ♂, type, Medford, Burlington county, N. J., Stone Coll.)

*Eyes.*—First row shorter than the second, straight, its middle eyes slightly larger. Eyes of second row fully their diameter apart. Third row broadest, its eyes largest and considerably nearer the second row than each other. Dorsal eye area less than one-sixth the length of the cephalothorax.

*Form.*—Cephalothorax in front not quite one-half its greatest transverse diameter, highest behind the middle, rather low and flat. Sides of head rather oblique. Chelicera about twice the length of the height of the head in front. Sternum distinctly longer than broad. Legs rather stout.

*Dimensions.*—Length of cephalothorax, 5.3 mm.

Length of abdomen, 5.3 mm.

Length of first leg, 18 mm.

Length of second leg, 16.6 mm.

Length of third leg, 16 mm.

Length of fourth leg, 22 mm.

*Color in Alcohol.*—*Cephalothorax* with a dull orange, broad median stripe extending from the second row of eyes to the posterior end of the thorax, constricted slightly just anterior to dorsal groove, widest around and narrowed behind this groove, and containing anteriorly a pair of elongate black spots; on each side of this median band a black stripe extending from the posterior eye to the end of the thorax, narrowest anteriorly and its greater diameter not equaling that of the median band; a broad submarginal band of dull orange, interrupted by bands of black radiating from the black stripe; extreme margin of thorax with alternating orange and black; forehead dull orange, a large black spot at the ventral margin of each side of the head. *Sternum* pale yellowish-brown with a narrow blackish margin. *Abdomen* above dark yellowish-brown, a deep black band arises at each antero-lateral margin and is continued back to about the middle, and behind each of these bands some small black spots, one pair of which, about the middle of the posterior half of the dorsum, is particularly prominent;



sides lighter than the dorsum, finely mottled with buff and brown; venter with a broad blackish area (its lateral margins deep black) extending from just behind the lung books to the spinnerets, the region of the genital orifice deep brown, the *lung books* yellow. *Chelicera* almost black, with a pale prominence at the supero-lateral angle, and covered anteriorly with both black and yellow hairs. *Labium* black proximally, yellow distally; *maxillæ* yellowish. *Legs* above pale reddish-brown, indistinct mottlings of blackish on all the femora and on the fourth tibiae, coxæ and femora of all much paler below. *Palpi* like the legs, except that the tarsus is almost black.

*Comparisons.*—This species differs from *purcelli* n. sp., *frondicola* Emerton, and *kochii* (Keyserling), to all of which it shows resemblances, in the posterior eyes being the largest, in the proportionately and absolutely larger size of the palpal organ, and in the black stripes on the cephalothorax.

19. *Lycosa frondicola* Emerton. (Pl. XXX, figs. 28, 29.)

*Lycosa frondicola* Emerton, 1885.

*Lycosa frondicola* Emerton, Marx, 1889.

*Lycosa frondicola* Emerton, Stone, 1890.

*Lycosa frondicola* Emerton, Banks, 1892.

(Specimens from Philadelphia, Pa.; Ft. Pleasant, N. J.)

*Eyes.*—First row fully as broad as the second, the lateral eyes slightly higher than the middle, the middle eyes approximated. Eyes of second row largest, their diameter apart. Third row broadest, its eyes nearer the second row than each other. Dorsal eye area less than one-sixth the length of the cephalothorax.

*Form.*—Cephalothorax rather narrow, in front more than one-half its greatest transverse diameter, flat above, highest between the posterior eyes and the dorsal groove. Sides of head moderately oblique. *Chelicera* massive, their length more than twice the height of the head in front. Sternum longer than broad. *Legs* stout, thickly covered with short hairs.

*Dimensions.*—Length of cephalothorax, ♂, 6.1 mm.; ♀, 6.2 mm.

Length of abdomen, ♂, 5.5 mm.; ♀, 8.5 mm.

Length of first leg, ♂, 20 mm.; ♀, 15.5 mm.

Length of second leg, ♂, 17 mm.; ♀, 14 mm.

Length of third leg, ♂, 16 mm.; ♀, 15 mm.

Length of fourth leg, ♂, 23 mm.; ♀, 18 mm.



*Color in Alcohol*, ♀.—*Cephalothorax* dark reddish-brown, a broad median band of yellowish-brown (with white hairs) from the posterior eyes to the posterior end of the thorax, a narrow marginal line of white hairs, posterior eyes surrounded by black, sometimes an indistinct light submarginal band. *Abdomen* above brown or yellowish-brown, a pair of small black spots on the anterior third of the dorsum near the mid-line, a large black spot at each antero-lateral margin of the dorsum continued caudad as an indistinct blackish band; sides lighter brown; venter yellowish with a broad blackish area extending from the epigynum to the spinnerets and not sharply bounded laterally, and indistinct blackish spots in the lateral yellow area. *Sternum* reddish-brown with black hairs. *Chelicera* black or reddish-black, with a black prominence at the supero-lateral angle. *Labium* blackish. *Maxillae* blackish with yellow distal ends. *Legs* reddish-brown, with no distinct darker markings. *Palpi* colored like legs.

The ♂♂ are colored similarly, but darker. The abdomen above is more grayish, with the black markings more distinct. The legs also are darker than in the ♀, and with darker markings on the femora.

*Comparison*.—Compare *Lycosa purcelli* n. sp.

20. *Lycosa Purcelli* n. sp. (Pl. XXX, figs. 30, 31.)

? *Lycosa kochii* Keyserling, Emerton, 1885.

*Lycosa kochii* Keyserling, Stone, 1890.

*Tarentula kochii* Keys., Marx, 1889 (*in parte*).

? *Lycosa kochi* Keys., Banks, 1892.

nec *Tarentula Kochii* Keyserling, 1876.

(Types in Stone Coll., ♀ from Philadelphia, ♂ from Pt. Pleasant, N. J.; other specimens from Philadelphia and Chester county, Pa.; Waterford, N. J.)

*Eyes*.—First row shorter than the second, lateral eyes slightly lower, middle eyes nearer the lateral than each other; eyes of the second row largest, about their diameter apart; third row broadest, its eyes a little farther from each other than from the eyes of the second row. Dorsal eye area about one-sixth the length of the cephalothorax.

*Form*.—Cephalothorax flattened above, highest behind the middle, in front nearly one-half its greatest transverse diameter. Head low in front and its sides rather oblique. Chelicera massive,

their length more than twice the height of the head in front. Sternum distinctly longer than broad. Legs comparatively stout.

*Dimensions of types*.—Length of cephalothorax, ♂, 6 mm.; ♀, 7 mm.

Length of abdomen, ♂, 5 mm.; ♀, 6.5 mm.

Length of first leg, ♂, 18 mm.; ♀, 20 mm.

Length of second leg, ♂, 17.3 mm.; ♀, 18 mm.

Length of third leg, ♂, 15 mm.; ♀, 17.5 mm.

Length of fourth leg, ♂, 21 mm.; ♀, 24.5 mm.

The smallest mature ♀ has the following dimensions: Cephalothorax, 5.6 mm.; abdomen, 6 mm.; first leg, 16 mm.; second leg, 14.5 mm.; third leg, 14 mm.; fourth leg, 20 mm.

*Color in Life, dark ♀*.—*Cephalothorax* blackish-brown, with paler brown hairs, these forming a broad median brown band which becomes narrower posteriorly and extends from the eyes of the second row to the posterior end of the thorax, at each side of its posterior portion (on the posterior declivity of the thorax) a large triangular black spot; all the hairs are short except those between the eyes. *Sternum* nearly black, with brownish hairs. *Abdomen* above buff-brown with no distinct pattern except a pair of black spots at the anterior margin, and an indistinct blackish line along the margins of the dorsum; sides paler, yellowish-buff; venter rich buff with numerous small black spots, most abundant at each lateral margin where they form an indistinct longitudinal stripe. *Epigynum* black. *Leg books* yellowish. *Chelicera, labium* and *maxillae* almost black with lighter tips. *Legs* ferruginous, the femora with buff annulations, and all joints sparsely covered with pale brownish hairs; ventral surface of the tarsi and metatarsi of the first and second pairs, and to less degree the metatarsi of the third and fourth pairs, paler owing to scopulae of very short, whitish hairs. *Pulpi* colored like legs.

*Color in Alcohol, ♀ ♀*.—*Cephalothorax* light to dark brownish-yellow, the median band pale orange. *Sternum* and *coxae* yellowish. *Abdomen* above yellowish-brown, darker than the cephalothorax, the black markings quite distinct; sides mottled yellow and brown; venter brownish-yellow, a row of small brown spots on either side, and in the middle either a dark area or a pair of rows of small brown spots converging from the epigynum to the spinnerets. *Epigynum* dark-brown. *Chelicera* reddish-brown, *max-*

*illæ* and *labium* lighter. *Legs* yellowish-brown, without darker markings or with them on the femora only.

*Color in Alcohol*, ♂♂.—*Cephalothorax* reddish-brown, the extreme margin black, a broad reddish median band of the same shape as in the ♀, and in the region of the median groove radiations of the same color from it to a broad submarginal band composed of whitish hairs. *Sternum* reddish-brown, with darker margin and black hairs. *Abdomen* above brown, a black stripe on either margin extending from the anterior end to behind the middle, and behind each of these stripes one or two dark spots; sides brownish; venter darker brown, lighter anterior to the lung slits. *Chelicera* black. *Labium* black at base only. *Maxilla* clear reddish-brown, like the *coxae*. *Legs* reddish-brown. *Palpi* colored like the legs, the tarsus darker.

*Comparisons*.—This species is very similar to *Lycosa kochii* Keys. in general coloration, dimensions and form. I have decided to separate them on the ground of the differences in the form of the epigynum. Keyserling's figure shows the epigynum rounded anteriorly, the swollen portion of the median piece very large, and this median portion with a deep groove on each side of it. In all the specimens of *purcelli*, on the other hand, the epigynum is conically pointed anteriorly, the swollen portion of the median piece is less than half the length of this piece, there is not a deep groove all around the median piece, and the marginal pieces are quite different in form from those represented in Keyserling's figure. Emerton has figured only a portion of the epigynum, so that I cannot decide whether he described *kochii* or *purcelli*; and Banks has not given any description.

In general coloration this species is very similar to *L. frondicola* Emerton, and some males of *purcelli* are as dark on the venter as the males of *frondicola*. The epigyna and ♂ palpi offer good diagnostic differences, and the cephalothorax is more slender in *frondicola*.

I dedicate this species to my old friend, Dr. W. F. Purcell, of the South African Museum, Capetown, who has written much of importance on the morphology and classification of different groups of the *Arachnida*.

Genus **PARDOSA** C. Koch.

The following key will aid in determining the species here described:

- A.—Sternum darker than the coxæ.  
 I.—Light markings on the posterior half of the dorsum of the abdomen usually distinct, ♂ palpus black on all the joints, . . . . . *nigropalpis*.  
 II.—Light markings on the posterior half of the dorsum of the abdomen indistinct, the patella of the ♂ palpus white, . . . . . *minima*.  
 B.—Sternum not darker than the coxæ.  
 I.—Median light band of the cephalothorax bordered by black bands, . . . . . *scita*.  
 II.—Median light band of the cephalothorax not bordered by black bands, . . . . . *solivaga*.

21. *Pardosa nigropalpis* Emerton. (Pl. XXX, figs. 32-34.)

*Pardosa nigropalpis* Emerton, 1885.

*Pardosa nigropalpis* Emerton, Marx, 1889.

*Pardosa nigropalpis* Emerton, Stone, 1890.

*Pardosa nigropalpis* Emerton, Banks, 1892.

(Numerous specimens from Philadelphia, Chester county, Lancaster county, Pa.; Pt. Pleasant, N. J.)

*Eyes*.—First row shorter than second, its lateral eyes slightly higher. Eyes of the second row more than their diameter apart. Third row broadest, its eyes slightly smaller than those of the second row, and almost as far from each other as from the second row. Dorsal eye area fully one-quarter the length of the cephalothorax.

*Form*.—Cephalothorax in front less than one-half its greatest transverse diameter, highest at the third pair of eyes, sides of the head vertical. Chelicera barely as long as the head is high in front, weak. Sternum distinctly longer than broad. Legs slender with long spines and few hairs. Superior spinnerets longer than the inferior.

*Dimensions*.—Length of cephalothorax, ♂, 2.2 mm.; ♀, 2.4 mm.

Length of abdomen, ♂, 2.2 mm.; ♀, 2.5 mm.

Length of first leg, ♂, 7 mm.; ♀, 8.2 mm.

Length of second leg, ♂, 6.6 mm.; ♀, 7.2 mm.

Length of third leg, ♂, 6.2 mm.; ♀, 7.2 mm.

Length of fourth leg, ♂, 10 mm.; ♀, 12.1 mm.

*Color in Life.* ♀.—*Cephalothorax* black, with a median brown band that commences anteriorly at the posterior eyes and there is nearly as broad as the eye area, is constricted a little before the middle, enlarges again around the dorsal groove but is narrowed behind it: there is a less distinct narrow submarginal brown band on the sides posteriorly, and brown on the sides of the head. *Sternum* black with white hairs and a lighter median line. *Abdomen* above with a large black spot at each antero-lateral margin, a yellowish-brown broad median band on the anterior third continued back to the spinnerets as a narrower and less distinct brown band, and on the sides of it black and brown mottlings; sides brown and whitish; venter blackish-brown behind the epigynum. *Lung books* bright yellow, *epigynum* black. Inferior *spinnerets* darker than the superior. *Chelicera* and *labium* black with a brownish tinge, *maxillae* lighter. *Legs* distinctly annulated brown and blackish on all joints, except the metatarsi. *Palpi* colored like the legs.

*Color in Alcohol.* ♀♀.—*Cephalothorax* blackish, a broad submarginal yellow band continuous posteriorly with that of the other side, median band yellow; eye area dark, but forehead light. *Sternum* in dark individuals black, in others black with yellow spots, or dark-brown with a yellow median line. *Abdomen* above blackish-brown mottled with minute yellowish dots, a yellow median stripe (margined by black) on the anterior half and ending in a point anterior to the middle, and behind it a series of 5-6 transverse, broad yellowish arches extending to the spinnerets, each edged broadly with black anteriorly, and each containing a pair of small black dots; in some individuals these arches are very distinct, in others barely apparent, and they are clearer on alcoholic than on living specimens; sides streaked with brownish-yellow and blackish; venter yellowish or brownish, sometimes with an indistinct darker longitudinal band (or a pair of darker lines) behind the epigynum. *Lung books* yellow. *Epigynum* yellowish with brownish-red margins. *Spinnerets* yellow. *Legs* yellow, banded more or less distinctly with brown.

*Color in Alcohol.* ♂♂.—Like the ♀, but darker. *Cephalothorax* black, the yellowish median band extending forward, sometimes little farther than the dorsal groove, sometimes nearly as far as the posterior eyes, it is widest at its anterior end and constricted as in the ♀: an indistinct yellowish submarginal band is sometimes

present; forehead below the first row of eyes yellowish, or black with two or three yellow spots. *Sternum* black. *Abdomen* above blackish, patterned as in the ♀; sides blackish; venter as in the ♀. *Legs* as in the ♀, except that the femora of the first pair are blackish proximally on the anterior edge. *Palpi* black on all the joints.

*Comparisons*.—A distinctly variable form, particularly in the coloration of the abdomen and in the form of the epigynum, two types of which I have figured. Females with the abdominal markings obscure are often difficult to distinguish from females of *L. minima*, though the males of the two are readily separated. It is the most abundant local species of the family.

22. *Pardosa minima* (Keyserling). (Pl. XXX, figs. 35, 36.)

*Lycosa minima* Keyserling, 1876.

*Pardosa albobatella* Emerton, 1885.

*Lycosa minima* Keyserling, Marx, 1889.

*Pardosa albobatella* Emerton, Marx, 1889.

*Pardosa albobatella* Emerton, Stone, 1890.

*Pardosa albobatella* Emerton, Banks, 1892.

*Pardosa minima* Keys., Banks, 1891.

(A few specimens from Philadelphia and Luzerne county, Pa.)

*Eyes*.—First row shorter than the second, its lateral eyes slightly higher. Eyes of second row largest, more than  $1\frac{1}{2}$  times their diameter apart. Third row a little broader than the second, its eyes farther from each other than from the second row. Dorsal eye area one-quarter the length of the cephalothorax.

*Form*.—Cephalothorax flattened above, highest at third pair of eyes, in front not quite one-half its greatest transverse diameter, sides of head steep. Chelicera weak, little longer than the head is high in front. Sternum longer than broad. Legs slender with rather long spines and few hairs.

*Dimensions*.—Length of cephalothorax. ♂, 2.3 mm.; ♀, 2.4 mm.

Length of abdomen, ♂, 2.3 mm.; ♀, 2.5 mm.

Length of first leg, ♂, 7 mm.; ♀, 7.5 mm.

Length of second leg, ♂, 6.5 mm.; ♀, 6.6 mm.

Length of third leg, ♂, 6.5 mm.; ♀, 6.7 mm.

Length of fourth leg, ♂, 10 mm.; ♀, 10.5 mm.

*Color in Alcohol*, ♂♂.—*Cephalothorax* black, a rather narrow, pale median stripe arising behind the posterior eyes, broadest in front of and narrowed behind the median groove; a submarginal

broad band of the same color, not extending to the head; forehead below the anterior eyes pale, with a black mark above each of the chelicera. *Sternum* black, sometimes with a narrow median pale stripe. *Abdomen* above gray, a yellow median band ending in a point anterior to the middle, and very indistinct yellowish transverse stripes behind it; sides gray; venter yellowish-brown, region of genital orifice black and a black median line continuing back from it to about the middle of the venter, and on each margin a row of small black dots. *Lung books* and *spinnerets* yellow. *Chelicera* mainly black, *labium* black, *maxille* yellow. *Legs*: First leg with the femur blackish above and below and with yellow distal end, the other joints yellow; second leg with the femur reddish-brown and blackish on its anterior edge only, the other joints yellow; third and fourth legs with the femora reddish-brown and the other joints yellowish; there is a dark spot on the upper surface of each coxa, but no annulations on the legs. *Palpi* black, except that the patella is white, and the distal end of the tarsus yellowish above.

*Color in Alcohol*, ♀♀.—*Cephalothorax* very dark reddish-brown, black between the eyes, a yellowish median stripe arising between the posterior eyes (where it is broadest), constricted anterior to and narrowed behind the dorsal groove, and dentate laterally on the sides of this groove; marginal line black, a broad submarginal band of yellowish, forehead yellowish with a black spot above each cheliceron. *Sternum* brownish-yellow with a pair of parallel longitudinal black stripes on its anterior half, and a single median one on the posterior half. *Abdomen* above dark greenish-gray with minute yellow spots, a median band of yellow (margined on each side by a narrow line of black) terminating in a point at or before the middle, and behind it about four indistinct yellow transverse arches; sides streaked with dark greenish and yellowish; venter in one individual yellow with a marginal narrow line of black on each side and an interrupted median line of black, while in another individual the venter is blackish behind the lung slits. *Spinnerets* yellow, *epigynum* orange with black margins. *Chelicera* yellowish, *maxille* dark-brown, *labium* black. *Legs* reddish-brown, distinctly annulated with brown on all the joints except the metatarsi. *Palpi* annulated like the legs.

*Comparisons*.—Compare *P. nigropalpis* Emerton.



23. *Pardosa scita* n. sp. (Pl. XXX, figs. 37, 38.)

(Types of ♂ and ♀ in author's collection, from Philadelphia; other specimens from the vicinity.)

*Eyes*.—The arrangement as in *P. nigropalpis*.

*Form*.—Cephalothorax highest at the posterior eyes, flattened above, in front not half its greatest transverse diameter. Sides of head steep. Chelicera about  $1\frac{1}{4}$  times as long as the head is high in front. Sternum distinctly longer than broad. Legs slender, with long spines and few hairs.

*Dimensions* of ♂.—Length of cephalothorax, 2 mm.

Length of abdomen, 2 mm.

Length of first leg, 7.8 mm.

Length of second leg, 7.2 mm.

Length of third leg, 7 mm.

Length of fourth leg, 10.3 mm.

*Color in Life*, ♂.—*Cephalothorax* black, with gray hairs arranged as follows: A broad median band extending from the eye area to the posterior end of the thorax and as broad anteriorly as the eye area, constricted just anterior to the dorsal groove and narrowed behind it; quite a distinct broad marginal stripe of these hairs; the hairs on the forehead almost white. *Sternum* densely covered with long whitish hairs. *Abdomen* above with a black spot at each antero-lateral margin and two smaller spots posteriorly on a line with each of these, the remainder of the dorsum grayish; sides and venter nearly white. *Chelicera* brownish, *maxille* and *labium* lighter. *Legs* pale grayish-brown with indistinct annulations on the femora. *Palpi* with femur, patella and tibia black with whitish hairs, tarsus black with black hairs.

*Color in Alcohol*, ♂.—The sides and venter of the *abdomen* are clear yellow. The *sternum* clear yellow with a pair of indistinct darker longitudinal lines. *Palpi* with femur and patella greenish-yellow, tibia the same color but with black hairs, tarsus black.

*Color in Alcohol*, ♀.—*Cephalothorax* as in ♂. *Sternum* clear yellow with black spots on the lateral margins. *Abdomen* above grayish-green with a yellow pattern very similar to that of *P. nigropalpis*, except that the median band is very broad anteriorly and the yellow transverse arches relatively larger and distincter, and that on each margin of the yellow pattern are two or three large black spots; venter yellow. Margins of *epigynum* reddish. *Che-*

*licera* yellow like the forehead, *maxille* yellow, *labium* brownish with yellow tip. *Legs* pale greenish-yellow, with indistinct annulations. *Palpi* colored like the legs.

*Comparisons.*—This species is very similar to *P. nigropalpis*; the differences in the copulatory organs of the two are slight, but *scita* is much lighter colored, is smaller, and the cephalothorax relatively wider and shorter.

It also closely resembles *P. pallida* Emerton, but differs from it in the epigynum and in the coloration (*e.g.*, the shape of the median cephalothoracic stripe, and the coloration of the abdominal venter).

24. *Pardosa solivaga* n. sp. (Pl. XXX, fig. 39.)

(2 ♀♀, types, Stone Coll., York Furnace, Pa.)

*Eyes.*—First row not as broad as the second, the lateral eyes barely two-thirds the diameter of the middle ones, and placed a little lower, eyes equidistant. Eyes of second row largest, about their diameter apart, placed on brownish prominences. Third row widest, its eyes also on brownish prominences and placed closer to the second row than to each other. All eyes relatively large and of a light color. Dorsal eye area a little less than one-quarter the length of the cephalothorax.

*Form.*—Cephalothorax in front fully one-half its greatest transverse diameter, highest just behind the middle. Head rather low in front, its sides moderately oblique. Length of chelicera about  $1\frac{1}{2}$  times the height of the head in front. Sternum nearly as broad as long. Legs rather slender, with moderately long spines and few hairs. Superior spinnerets slightly longer than the inferior.

*Dimensions.*—Length of cephalothorax, 3.9 mm.

Length of abdomen, 4 mm.

Length of first leg, 12 mm.

Length of second leg, 11.5 mm.

Length of third leg, 11.3 mm.

Length of fourth leg, 16 mm.

*Color in Alcohol.*—*Cephalothorax* clear reddish-brown, the only dark color being the prominences which bear the second and third eyes; a broad yellowish median stripe arises from the second row of eyes, is constricted in front of the median groove and narrowed posterior to this groove; an indistinct submarginal broad yellowish stripe is also present, and radiating areas of yellowish from it to the middle of the median band. *Sternum* yellowish with black

hairs. *Abdomen* dull orange yellow above, with a brownish mark at each antero-lateral margin prolonged backward as an indistinct stripe, transverse lines of brown across the posterior half of the dorsum, and two longitudinal lines of brown on the anterior half meeting at a point in the middle; the sides streaked with dull orange and buff; venter paler yellow with small dark spots most distinct and numerous laterally and posteriorly. *Epigynum* reddish-brown, *spinnerets* pale yellow. *Chelicera* reddish-brown, *maxillae* and *labium* yellow like the sternum. *Legs* clear reddish-brown, with indistinct buff annulations on the femora and tibia. *Palpi* colored like the legs.

*Comparisons.*—This form resembles a *Lycosa* in relative stoutness of the legs, in the comparative shortness of their spines, and in the amount of hair upon them, and in comparative stoutness of the chelicera; the middle eyes of the first row are also decidedly larger than the lateral. Apparently, however, it should be considered a *Pardosa* on account of the length of the legs, the greater length of the superior spinnerets, and the comparatively long extent of the dorsal eye area.

Genus **PIRATA** Sund.

The following key will help to distinguish the species here described:

A.—Cephalothorax not more than 1.8 mm. long, . . . *humicolus*.

B.—Cephalothorax 2.2–2.8 mm. in length.

I.—Femora usually annulated, submarginal light stripe of cephalothorax very distinct, venter usually with longitudinal rows of dark spots, . . . . . *liber*.

II.—Femora not banded, submarginal light stripe of cephalothorax indistinct, venter without rows of dark spots.

1.—A large dark mark on the sides near the spinnerets,  
*nigromaculatus*.

2.—No large dark mark on the sides near the spinnerets,  
*elegans*.

C.—Cephalothorax more than 3 mm. long.

I.—Eyes of second row separated from the third row by about their diameter, . . . . . *marxi*.

II.—Eyes of second row separated from the third row by twice their diameter, . . . . . *procursus*.

25. *Pirata humicolus* n. sp. (Pl. XXX, figs. 40, 41.)

(Types of ♂ and ♀, and other specimens, author's collection, Woodland Cemetery, Philadelphia.)

*Eyes.*—First row a little shorter than the second, the lateral eyes slightly lower. Eyes of second row largest, nearly their diameter apart. Third row widest, its eyes a little nearer the second row than each other. Dorsal eye area about one-fifth the length of the cephalothorax.

*Form.*—Superior spinnerets twice the length of the inferior. Cephalothorax in front one-third its greatest transverse diameter, highest at the dorsal groove. Sides of head vertical. Chelicera about  $1\frac{1}{2}$  times as long as the head is high in front. Sternum longer than broad. Legs rather stout.

*Dimensions.* — Length of cephalothorax, ♂, 1.7 mm., ♀, 1.8 mm.

Length of abdomen, ♂, 1.2 mm.; ♀, 2.3 mm.

Length of first leg, ♀, 4.8 mm.

Length of second leg, ♀, 4.3 mm.

Length of third leg, ♀, 4.2 mm.

Length of fourth leg, ♀, 6.1 mm.

*Color in Life, ♀.*—*Cephalothorax* black, a narrow white marginal line not extending as far forward as the plane of the posterior eyes; from the posterior eyes two brownish lines pass caudad, unite at the dorsal groove, and are continued backward to the posterior end of the thorax as one median band. *Sternum* shining brownish-black. *Abdomen* above black, a rather irregular line of 5–6 white spots (the foremost two largest) on either side, and indistinct transverse lines of white on the posterior dorsum; venter dark-gray owing to scattered white hairs on a black ground, a narrow white semicircle around the anterior edge of the spinneret prominence. *Chelicera*, *maxillæ* and *labium* almost black. *Legs* pale-brownish, paler below, a black ring at the distal ends of the first and second femora. *Palpi* colored like the legs.

*Color in Alcohol, ♀♀.*—*Cephalothorax* greenish-brown, at the anterior end of the median groove a dark triangular mark from the anterior end of which a narrow yellowish line, bordered on each side by a brown line, passes to the second eye row; a narrow yellow line arises on the lateral margin of the second eye row, passes around the lateral margin of the third eye row, and it and corresponding line of the opposite side converge caudad, border the triangular dark spot, and unite behind the latter as a narrow yellow line which passes to the posterior end of the cephalothorax;

eye region black; a narrow marginal black line on the thorax, and above it a broader submarginal yellow band which is not continued along the head; there are also indistinct brownish-yellow markings radiating from the median groove. *Sternum* pale yellowish-brown, with a narrow dark margin and a median yellow stripe. *Abdomen* above greenish or grayish-brown, a more or less distinct median yellow band terminating in a point anterior to the middle, on each side of it two lines of white spots extending to the spinnerets, the more median line with 6-7 spots of which the most anterior is largest and the more posterior connected by faint yellow cross lines with those of the opposite side, while the more lateral line is placed on the margin of the dorsum, sometimes only posteriorly, and the white spots which compose it somewhat elongate. The sides are greenish-brown or yellowish-brown. The venter from the lung slits to a short distance in front of the spinnerets yellow, this yellow sharply outlined laterally and posteriorly by the greenish-brown of the sides; sometimes there are one or more transverse lines of minute dots just anterior to the spinnerets. *Epigynum* reddish-brown. *Spinnerets* greenish or yellowish, the superior ones darker. *Chelicera* dark reddish-brown, *labium* blackish-brown, *maxille* yellowish. *Legs* greenish-brown with the coxæ and proximal portions of the femora yellow. *Palpi* greenish-brown, the proximal joint yellow.

*Color in Alcohol*, ♂. — Considerably darker than the ♀. *Cephalothorax* almost black, extreme marginal line yellow, no submarginal light band. *Sternum* as in the ♀. *Abdomen* also as in the ♀, except that the venter is very dark by reason of closely approximated, transverse dark lines. *Chelicera* black. *Legs* yellow, the femora of the first and second blackish above and below, the other joints of these legs lighter than the third and fourth legs. *Palpi* with the femur blackish, the other joints yellowish-brown.

*Comparisons.*—This species seems closely related to *P. minutus* Emerton; but the palpal organ of the ♂ is proportionately larger in *humicolus* and shows some differences in details of structure, and in *humicolus* the cephalothorax is not "gray, with a light line near the edge of the thorax and several radiating lines," but in the ♂ (and Emerton describes only the ♂ of *minutus*) is nearly

black in alcohol (probably deep black in life), the extreme margin yellow, and with a pair of yellow lines on the dorsum.

It differs also from another closely related species, *P. exigua* (correctly *exiguus*) Banks, in slightly greater size, in the structure of the epigynum, and to some extent in coloration.

**26. *Pirata liber* n. sp.** (Pl. XXX, figs. 42, 43.)

? *Pirata piratica* Clerck., Stone, 1890.

(♂, ♀, types, Philadelphia, author's collection; numerous specimens from Philadelphia and vicinity.)

*Eyes*.—First row nearly as broad as the second, its lateral eyes slightly higher. Eyes of second row largest, about half their diameter apart. Third row broadest, its eyes much nearer the second row than each other. Dorsal eye area less than one-fifth the length of the cephalothorax.

*Form*.—Superior spinnerets nearly twice the length of the inferior. Cephalothorax in front almost one-half its greatest transverse diameter, flattened above and highest at middle. Sides of head vertical. Chelicera about  $1\frac{1}{3}$  times the height of the head in front. Sternum longer than broad, its anterior margin straight. Legs rather slender.

*Dimensions*. — Length of cephalothorax, ♂, 2.2 mm.; ♀, 2.8 mm.

Length of abdomen, ♂, 2.2 mm.; ♀, 2.8 mm.

Length of first leg, ♀, 7.5 mm.

Length of second leg, ♀, 6.6 mm.

Length of third leg, ♀, 7 mm.

Length of fourth leg, ♀, 9.3 mm.

*Color in Life*, ♀, type.—*Cephalothorax* longitudinally banded brown and yellowish, as follows: A narrow yellow median band extending from between the second eyes in front to not quite the middle of the cephalothorax behind, and bordered on each side by brown; two yellow lines starting at the lateral borders of the first and second eye rows, and becoming thicker converging backward to the sides of the dorsal groove, from whence they are continued back as one median line to the end of the thorax, and each of these bordered laterally by a brown band, the widest of all the bands, and with deeply scalloped lateral margin; lateral from the latter a yellow band, then a narrower and shorter brown band, then a still

narrower yellow submarginal line, finally a narrow black marginal line. The eye region black. *Sternum* yellowish-brown with a narrow brown margin, and a brown spearhead-shaped mark (composed of two converging dark lines) with the point directed caudad. *Abdomen* above blackish, a narrow brown median band terminating in a point before the middle, a white line at each antero-lateral margin of the dorsum, and small white spots on the posterior two-thirds of the dorsum arranged in two lines of 5-6 spots each, the most posterior in each line largest; sides brown above, below yellowish-brown streaked with white hairs; venter with a broad brownish band extending the whole length and containing indistinct darker dots. *Lung books* yellow. *Spinnerets* brown. *Chelicera*, *maxillae* and *labium* reddish-brown, the last nearly black at the base. *Epigynum* reddish-brown. *Legs* pale yellowish-brown with indistinct darker annulations on the femora, patellae and tibiae.

*Color in Alcohol*, ♀♀.—The ground color of the dorsum of the *abdomen* greenish-brown, a yellow median band ending in a point at the middle, on each side a row of about five elongated yellow spots, becoming confluent at the spinnerets with its fellow of the opposite side, and more laterally on each side a row of 4-5 minute yellow spots; venter yellowish with a median and two pairs of lateral confluent dark spots which do not extend to the spinnerets, the more median rows longer and curved. *Legs* more or less distinctly banded.

*Color in Alcohol*, ♂♂.—*Cephalothorax* as in the ♀, but *sternum* sometimes without dark lines. *Abdomen* as in the ♀. *Legs* clear reddish-brown, femora yellowish proximally and ventrally, femora and tibiae indistinctly banded. *Palpi* reddish-brown, tarsi darker. Coloration otherwise as in the ♀.

*Comparisons*.—This species differs from *P. elegans* Stone markedly in the structure of the epigynum and in the annulations of the legs. From the other most nearly related form, *P. insularis* Emerton, it differs in smaller size, in the coloration of the abdomen, and in the structure of the epigynum.

27. *Pirata nigromaculatus* n. sp. (Pl. XXX, figs. 44, 45.)

(♂, ♀, types, Harvey's Lake, Luzerne county, Pa., Stone Coll. several other specimens collected at the same place.)

*Eyes*.—First row nearly as broad as the second, its lateral eyes



slightly larger and very slightly higher. Eyes of second row largest, their diameter apart. Third row widest, its eyes nearer the second row than each other. Dorsal eye area less than one-quarter the length of the cephalothorax.

*Form*.—Superior spinnerets about  $1\frac{3}{4}$  times the length of the inferior. Cephalothorax in front less than one-third its greatest transverse diameter, highest at the anterior edge of the median groove. Chelicera about  $1\frac{1}{3}$  times the height of the head in front. Sternum little longer than broad. Legs rather stout.

*Dimensions*.—Length of cephalothorax, ♂, 2.2 mm.; ♀, 2.8 mm.

Length of abdomen, ♂, 1.8 mm.; ♀, 3.3 mm.

Length of first leg, ♀, 7 mm.

Length of second leg, ♀, 6.5 mm.

Length of third leg, ♀, 6.4 mm.

Length of fourth leg, ♀, 9.2 mm.

*Color in Alcohol*, ♀♀.—*Cephalothorax* reddish-brown, a narrow buff band from between the second pair of eyes to the dorsal groove, a broader buff band on each side arising at the posterior eye, with its fellow of the opposite side converging back to the sides of the median groove, where the three buff bands unite and pass caudad as one median band to the end of the thorax; a broader submarginal buff line is present in some specimens, but in most there is no trace of it; eye region black. *Sternum* yellowish, its margins darker, usually a median broad light band bordered by narrow lines of darker. *Abdomen* pale yellowish-brown, a little darker above; on the dorsum a lanceet-shaped yellowish mark bordered on each side by a brown line and ending in a point at the middle, and with more or less distinctness about five transverse brown arches behind it and extending to the spinnerets where they are smallest, and in some specimens lighter spots at the lateral ends of these transverse markings; on each side, close to the spinnerets, a dark mark, sometimes black and very distinct, sometimes very indistinct, and sometimes ventrally connected with its fellow by a transverse dark band just anterior to the spinnerets; venter pale yellowish-brown, lightest in the mid-line but without markings. *Epigynum* blackish-red, *spinnerets* like the venter. *Chelicera* pale reddish-brown; *maxilla* and *labium* like the sternum. *Legs* yellow without darker annulations, as are the *palpi*.

*Color in Alcohol*, ♂.—*Cephalothorax* as in the ♀, but darker and without a submarginal light stripe. *Sternum* darker than in ♀, brownish with a narrow median light stripe. *Abdomen* also darker above, with the same general pattern but the light spots larger and more conspicuous; sides brownish streaked with yellow, no dark spots near the spinnerets; venter brownish-yellow. *Legs* yellow, femora of the first and second pairs deep brown above and below. *Palpi* yellow, femora deep brown.

*Comparisons*.—Quite closely related to *P. elegans* Stone, but the *epigyna* are quite different. The ♀♀ also show considerable resemblance to those of *P. liber*, while the ♂♂ are readily distinguished both by color and by the structure of the palpus; but there is a difference in the epigynum, the submarginal light thoracal stripe is distinct in *liber*, which has generally dark markings on the abdominal venter and lacks the large dark spot near the spinnerets.

28. *Pirata elegans* Stone. (Pl. XXX, fig. 46.)

*Pirata elegans* Stone, 1890.

(4 ♀♀, types, York county, Pa., Stone Coll.)

*Eyes*.—First row shorter than the second, its lateral eyes lower and slightly larger, its middle eyes approximated. Eyes of second row largest, their diameter apart. Third row widest, its eyes on slight tubercles (as are the second eyes) and nearer the second row than each other. Dorsal eye area a little more than one-fifth the length of the cephalothorax.

*Form*.—Superior spinnerets double the length of the inferior. Cephalothorax flattened above, highest at the posterior eyes, in front not more than one-third its greatest transverse diameter. Chelicera rather weak, their length not much more than  $1\frac{1}{3}$  times the height of the head in front. Sternum distinctly longer than broad. Legs rather stout.

*Dimensions*.—Length of cephalothorax, 2.5 mm.

Length of abdomen, 3 mm.

Length of first leg, 6 mm.

Length of second leg, 5.5 mm.

Length of third leg, 6 mm.

Length of fourth leg, 9.3 mm.

*Color in Alcohol*.—*Cephalothorax* clear reddish-brown, an interrupted narrow blackish submarginal stripe just above the yellow margin, and fine black lines radiating from the dorsal groove; a

buff median band, narrowest at the posterior edge of the thorax, enlarging from the median groove forward, and reaching anteriorly in the mid-line to in front of the posterior eyes and on the sides to the first eye row, this buff band divided into three anteriorly by two darker lines which converge from the posterior eyes to the dorsal groove; on each side is a black line from the second to the third eyes. *Sternum* yellowish with narrow black margin, and sometimes two broader, rather indistinct darker longitudinal bands. *Abdomen* above dark yellowish-brown, variable in color; in two specimens marbled with yellow and brown on the anterior part of the dorsum, in the third with three pairs of black spots, in the fourth with a broad yellow median band on the anterior half narrowing suddenly just behind the middle and continuing to the spinnerets, while the posterior half of the dorsum has a few transverse yellow and brown lines; sides brownish or yellowish; venter yellowish, lighter than the sides, without distinct spots but with an indistinct dark mark behind the epigynum. *Epigynum* reddish-brown. *Chelicera* light reddish-brown. *Labium* and *maxille* yellowish-brown. *Legs* and *palpi* pale yellowish-brown.

*Comparison*.—See *P. nigromaculatus*.

29. *Pirata marxi* Stone. (Pl. XXX, fig. 47.)

*Pirata marxi* Stone, 1890.

(1 ♀, type, York county, Pa., Stone Coll.)

*Eyes*.—First row fully as broad as the second, its lateral eyes higher. Eyes of second row largest, about their diameter apart. Third row broadest, its eyes much nearer the second row than each other. Dorsal eye area less than one-sixth the length of the cephalothorax.

*Form*.—Superior spinnerets fully double the length of the inferior. Cephalothorax in front about one-half its greatest diameter, highest about the middle. Chelicera about  $1\frac{1}{2}$  times as long as the head is high in front. Sternum longer than broad. Legs rather stout.

*Dimensions*.—Length of cephalothorax, 3.4 mm.

Length of abdomen, 4.5 mm.

Length of first leg, 11.5 mm.

Length of second leg, 11 mm.

Length of fourth leg, 14 mm.

*Color in Alcohol*.—*Cephalothorax* clear reddish-brown, a yellowish submarginal band not extending to the head, a narrow buff

median band from the middle eyes to the dorsal groove and on each side of the posterior half of it a yellowish area. *Sternum* light reddish-brown, with a darker brown margin from which pointed lines radiate centrad. *Abdomen* above with a yellowish band attenuating from in front to the spinnerets, its posterior half segmented by brownish transverse lines, in the anterior half of this band a narrower band ending in a point at its middle and darkest laterally; to each side of the median band a brownish band flecked anteriorly with small yellow spots, and containing in its posterior half a row of 4-5 larger yellowish spots. Sides yellowish, marbled and streaked with brown posteriorly. Venter yellow, just behind the epigynum two, posteriorly slightly converging, rows of four small brown spots, the length of each row not much more than the width of the epigynum. *Epigynum* reddish-brown, and the region in front of it is darker than the region behind it. *Spinnerets* yellowish-brown. *Chelicera* reddish-brown. *Maxillæ* brownish, the *labium* is the same color at the tip but blackish at the base. *Legs* reddish-brown, as are the *palpi*.

*Comparisons*.—This form comes nearest *Pirata piraticus* Clerck., the coloration and size of the two are quite similar (judging from Emerton's description), but the epigyna are different (compare Emerton's fig. 76, Pl. XLVIII).

30. *Pirata procursus* n. sp. (Pl. XXX, fig. 48.)

(2 ♀♀, types, Stone Coll., Harvey's Lake, Luzerne county, Pa.)

*Eyes*.—First row about straight, nearly as long as the second. Eyes of the second about  $1\frac{1}{2}$  times their diameter apart. Third row widest, its eyes nearly as large as those of the second row, and considerably nearer the second row than each other. Dorsal eye area less than one-quarter the length of the cephalothorax.

*Form*.—Superior spinnerets about double the length of the inferior. Cephalothorax broad, in front about one-half its greatest diameter, highest at the posterior eyes, its posterior declivity gradual. Sides of head steep. Length of chelicera about  $1\frac{1}{4}$  times the height of the head in front. Sternum a little longer than broad, its anterior margin slightly concave. Legs slender.

*Dimensions*.—Length of cephalothorax, 3.6 mm.

Length of abdomen, 4 mm.

Length of first leg, 11.2 mm.

Length of second leg, 10 mm.

Length of third leg, 11.2 mm.

Length of fourth leg, 16 mm.

*Color in Alcohol.*—*Cephalothorax* dark reddish-brown, eye region black with whitish hairs; an indistinctly banded, broad, lighter median band extends from the middle row of eyes backward to the end of the thorax, it is as broad anteriorly as the eye area, constricted in front of and again behind the median groove, and narrowed in its posterior portion; the forehead is lighter than this band; the extreme margin of the thorax is blackish. *Sternum* dark reddish-brown. *Abdomen* above rather indistinctly marked with blackish and dark buff, as follows: a narrow buff median band anteriorly, to each side of it a narrower buff band, all these on the posterior dorsum breaking into large, ill-defined buff spots that reach to the spinnerets; at each antero-lateral margin of the dorsum a black spot; sides brownish, streaked longitudinally with narrow buff lines; venter yellowish-brown and quite sharply delimited from the color of the sides, without distinct markings. *Epigynum* dark reddish-brown and yellow. *Spinnerets* yellowish, the superior ones darker. *Chelicera* clear reddish-brown, *labium* and *maxilla* lighter. *Legs* reddish-brown, distinctly mottled and annulated with buff on all the joints. *Palpi* colored like the legs.

*Comparisons.*—This form is well marked by three peculiar features—the structure of the epigynum, the equality in length of the first and third legs (unique, to my knowledge, in this family), and in that the posterior eyes are almost as large as the middle ones. In the length of the legs it resembles a *Pardosa*, as also in the wide separation of the eyes of the second row. I have decided to class it as a *Pirata* on the ground of the great length of the superior spinnerets, of the rather close approximation of the second and third rows of eyes, and of the hairiness of the legs.

Genus **OCYALE** Sav. and Aud. (Pl. XXX, fig. 49.)

31. *Ocyale undata* (Hentz).

*Micrommata undata* Hentz, 1841.

? *Micrommata serrata* Hentz, 1841.

nec *Micrommata carolinensis* Hentz, 1841.

*Ocyale undata* Emerton, 1885.

*Ocyale undata* Hentz, Marx, 1889.

*Ocyale undata* (Hentz), Stone, 1890.

*Ocyale undata* Hentz, Banks, 1892.

(Numerous specimens, but no mature ♂♂, from Philadelphia and Chester county, Pa.)

*Eyes*.—First row broader than the second by more than the diameter of one of its eyes, lateral eyes larger and a little higher. Eyes of second row about their diameter apart. Third row broadest, its eyes a little larger than those of the second row, about their diameter behind that row, and placed on tubercles. Dorsal eye area about one-sixth the length of the cephalothorax.

*Form*.—Cephalothorax broad and flat, highest at the posterior eyes, in front more than one-half its greatest transverse diameter.

Length of chelicera about  $1\frac{3}{4}$  times the height of the head in front. Sternum nearly as long as broad, nearly straight in front, pointed behind. Legs slender. Superior spinnerets twice the length of the inferior.

*Dimensions*, ♀.—Length of cephalothorax, 5.5 mm.

Length of abdomen, 8.5 mm.

Length of first leg, 24.5 mm.

Length of second leg, 24.5 mm.

Length of third leg, 20 mm.

Length of fourth leg, 24 mm.

*Color in Life*, ♀.—*Cephalothorax* above brownish-yellow, with a broad brown median stripe from the posterior eyes to the end of the thorax, an interrupted brown submarginal stripe on each side, extreme margin of head brown; all these brown areas are due to the absence of hairs upon them, the yellowish-brown to the presence of hairs which are longest on the sides of the head; posterior eyes on black tubercles. *Sternum* light yellowish-brown, margins a little darker. *Abdomen* above with a pale and indistinctly bounded reddish-brown stripe, which is nearly as broad as the dorsum, extends its entire length, and is scalloped along its posterior half; bounding each side of the anterior third of this stripe is a narrow yellow stripe, and on the posterior half of the dorsum on each side a row of five yellow spots (in a line with these yellow stripes), of which the most anterior are elongated and largest; in the median line of the anterior half of the broad reddish-brown dorsal stripe is a slightly darker brown stripe, also bordered anteriorly with narrow yellow lines, and with a row of five yellow spots behind each of these lines. The sides are indistinctly streaked with yellow and brown. The venter pale yellowish-brown, with a

rather indistinct, broad, darker median stripe containing a narrower light one. *Spinnerets* brown. *Epigynum* black. *Leg books* yellow. *Chelicera* pale reddish-brown. *Maxillæ* and *labium* pale brown, the latter with darker base. *Legs* reddish-brown with buff hairs and black spines, but no distinct annulations. *Palpi* colored like the legs.

*Comparisons.*—Hentz's *Micrommatu carolinensis* cannot be considered a synonym of *undata*, as Emerton and Marx have done, since Hentz placed *carolinensis* in the tribe of the *Biarcuate*, in which the "upper and lower rows of eyes [are] bent and opposed."

Genus **DOLOMEDES** Latr.

The following key will help to distinguish the species here described, but the structure of the copulatory organs is the only sure diagnostic character; there is one ♀ of what is probably *D. sexpunctatus* Hentz in the Stone collection, but I have not included it since it is not mature:

- A.—Posterior portion of the abdomen with transverse yellow markings of the shape of a W, . . . . . *urinator*.  
B.—Posterior portion of the abdomen not so marked, . . . *idoneus*.

**32. Dolomedes urinator** Hentz. (Pl XXX, fig. 50.)

*Dolomedes urinator* Hentz, 1841.

? *Dolomedes tenebrosus* Hentz, Emerton, 1885.

*Dolomedes urinator* Hentz, Marx, 1889.

*Dolomedes tenebrosus* Hentz, Stone, 1890.

? *Dolomedes urinator* Hentz, Banks, 1892.

(♀♀, but no ♂♂, from Philadelphia, Chester county, Bucks county, Lancaster county, York Furnace, Pa.)

*Eyes.*—First row broader than the second by less than the diameter of one of its lateral eyes, lateral eyes slightly larger and higher. Eyes of the second row slightly more than their diameter apart. Third row broader than first, its eyes fully as large as the eyes of the second row.

*Form.*—Cephalothorax flat and broad, rounded, its greatest diameter equaling the length from the third eye row backward, in front more than one-half its greatest transverse diameter, highest behind the middle. Chelicera less than twice the height of the head in front. Legs slender. Sternum broader than long.

*Dimensions.*—Length of cephalothorax, 10.5 mm.

Length of abdomen, 14 mm.

Length of first leg, 42 mm.



Length of second leg, 43 mm.

Length of third leg, 40 mm.

Length of fourth leg, 43 mm.

*Color in Alcohol.*—*Cephalothorax* brown or deep reddish-brown, a pair of wedge-shaped black spots close together just in front of the median groove, a narrow pale median line between these which is sometimes continued forward as far as the plane of the posterior eyes, and generally backward around the median groove to the posterior end of the thorax; on each side a curved yellow line extends from the posterior eye backward to the wedge-shaped spot of the corresponding side, the space enclosed by these two lines being oval and widest behind and redder than the rest of the cephalothorax; the extreme margin of the thorax black, on each side a more or less distinct, broad, yellowish submarginal band, sometimes broken into large spots, and with yellow bands radiating from it to the median groove; a small black mark at the posterior margin of each posterior eye. *Sternum* yellowish or reddish-brown, with either a lighter median line or a triangular lighter area. *Abdomen* above deep brown, with yellowish and blackish markings as follows: A rather broad yellowish median stripe extending to about the middle, enlarged at its middle and forked at its posterior end, a pair of narrow and short lines of the same color connecting with it at an angle on each side, and all these edged laterally with black; on the posterior half of the dorsum transverse yellow markings, each edged anteriorly with black, of angular form and with the convexity directed forward, or more or less of the shape of a W; they are 4-6 in number and the more anterior ones are wider. In specimens from West Chester the whole dorsum is much darker, the yellow and black markings very obscure, while on the posterior half are 4-5 pairs of small white spots. Sides of the abdomen brownish. Venter with a yellowish or yellowish-brown mark extending in front from the lung slits, where it is as broad as these, backward to the spinnerets where it is much narrower, this light area banded on each side by a row of minute blackish dots, and sometimes containing narrow dark lines.

*Epigynum* reddish-brown, the region in front of it yellowish. *Chelicera* dark reddish-brown, *maxillæ* and *labium* of the same color, but their distal ends yellow. *Legs* brownish below; above darker reddish-brown with buff markings on the femora and more

obscure rings on the other joints, the distal ends of the tibiae and tarsi black. *Palpi* annulated buff and reddish-brown.

*Comparisons.*—Of all the species of *Dolomedes* described by Hentz *D. urinator* is most similar to this one. It agrees with his fig. 3, Pl. XVI, in the eyes and the general coloration, but his description is very meagre. Whether the form described by Emerton is *tenebrosus* Hentz I cannot decide from his description, and Emerton's figure of the epigynum (9c, Pl. XLIX) shows differences from the species described by me.

**33. *Dolomedes idoneus* n. sp.** (Pl. XXX, fig. 51.)

(♀, type, West Chester, Pa., author's collection; another mature ♀ from Harvey's Lake, Luzerne county, Pa., Stone Coll.)

*Eyes.*—First row broader than the second by about half the diameter of one of its lateral eyes which are slightly higher and slightly smaller. Eyes of the second row not quite their diameter apart. Third row widest, its eyes about as large as those of the second row.

*Form.*—Cephalothorax much of the same form as in *urnator*. Chelicera massive, their length less than twice the height of the head in front. Legs stouter than in *urnator*. Sternum a little longer than broad.

*Dimensions.*—Length of cephalothorax, 10.2 mm.

Length of abdomen, 12.5 mm.

Length of first leg, 40 mm.

Length of second leg, 39.2 mm.

Length of third leg, 37 mm.

Length of fourth leg, 41 mm.

*Color in Alcohol*, type.—*Cephalothorax* reddish-brown, its markings very similar to those of *D. urinator*, but no black mark at the posterior eyes, and the wedge-shaped marks just in front of the dorsal groove very indistinct. *Sternum* yellowish with blackish margin. *Abdomen* above yellow and brownish-black, the yellow forming a median stripe on the anterior third of the dorsum ending posteriorly in a blunt point, a large spot on the middle, irregular arches on the sides of the dorsum, and a median row of indistinct spots on the posterior dorsum; sides dark-brownish, somewhat streaked with yellowish; venter behind the lung slits brown, lighter than the sides, with two parallel dark lines on each side of the mid-line. *Epigynum* black, except the large rounded part which is bright red. *Lung books* paler than the venter. *Chelicera* deep

black, *labium* and *maxillæ* black basally but yellowish distally. *Legs* distinctly marked and annulated with deep reddish-brown and yellowish on all the joints except the metatarsi, which are blackish. The *palpi* are colored like the legs.

*Comparisons.*—This form differs markedly in the epigynum from the form here described as *urinator*, but is otherwise very similar.

I have been obliged to describe it as a new species, though the same form may have been previously described, for the following reasons: of the described American larger species of *Dolomedes*, those of Walckenaer and C. Koch are altogether insufficiently characterized. Of Hentz's species, *tenax* and *hastulatus* are excluded by the character of their eyes, and *sexpunctatus* by its smaller size and very different coloration, and *scriptus*, *albivens* and *lanceolatus* by their different coloration. There remains *D. tenebrosus*, Hentz's full description of which is as follows: "Livid brown; abdomen and cephalothorax varied with blackish angular markings; feet annulated with blackish; frequently measuring over four inches from the extremity of the first pair of legs to that of the fourth pair; male with legs 1, 2, 4, 3." This form may be identical with my *idoneus*, but Hentz's description characterizes no better than do any of Walckenaer's, and Hentz's figure of the eyes (fig. 12, Pl. XIX) does not agree with the eye arrangement in *idoneus*; and further, Hentz states that *tenebrosus* "does not seek the vicinity of water, near which it was never seen, but dwells generally in elevated dry places," while both specimens of *idoneus* were found near water. Hentz's description is not adequate in this genus where the structure of the copulatory organs is a necessary diagnostic, and it is best to regard *tenebrosus* as insufficiently characterized, to drop the name, and thus avoid future futile attempts to recognize it.

*D. idoneus* is readily distinguished in its epigynum from the form described by Emerton as "*D. tenebrosus* Hentz," yet Hentz's description applies equally well to Emerton's specimens as to those of *idoneus*.

Banks states of *D. scriptus* Hentz: "What has been taken as *D. tenebrosus* Hentz is this species. What I feel sure is *D. scriptus* H. has the epigynum as figured by Emerton for *D. tenebrosus* and very similar to that of *D. scapularis* as figured by Keyserling.

*D. tenebrosus* H. has a much broader epigynum and a broad septum, which does not, however, cover the cavity." I do not understand how we may feel confident of ever identifying *tenebrosus*, and Keyserling's figure of the epigynum of *scapularis* is quite different from mine of *idoneus*.

Family OXYOPIDÆ.

*Characters of the Family.*—The same characters as in the *Lyco-sida*, except that the eyes are arranged in three rows or four rows, 2. 2. 4., or 2. 2. 2. 2. The eyes of the first row are never largest.

Genus OXYOPES Latr.

34. *Oxyopes salticus* Hentz. (Pl. XXX, fig. 52.)

*Oxyopes salticus* Hentz, 1841.

*Oxyopes gracilis* Keyserling, 1876.

*Oxyopes salticus* Hentz, Marx, 1889.

*Oxyopes astutus* Hentz, Banks, 1891.

(2 mature ♀♀ from Philadelphia, Pa., author's collection.)

*Eyes.*—Eyes of the first row smallest, more than their diameter apart, much nearer the second row than to the edge of the forehead, removed less than their diameter from the second row. Eyes of second row largest, separated  $1\frac{1}{2}$  times their diameter. Third row broadest, its eyes separated by less than their diameter from the second row. Fourth row slightly broader than the second, its eyes about double their diameter apart. The eyes of the second, third and fourth rows on black tubercles.

*Form.*—Cephalothorax broad and short but high, highest at the middle, in front more than one-half its greatest transverse diameter. Length of the chelicera not quite the height of the head in front. Sternum longer than broad. Superior and inferior spinnerets of equal length. Legs slender with very long spines.

*Dimensions.*—Length of cephalothorax, 2.9 mm.

Length of abdomen, 3 mm.

Length of first leg, 10.4 mm.

Length of second leg, 9.5 mm.

Length of third leg, 9.7 mm.

Length of fourth leg, 9 mm.

*Color in Alcohol.*—Cephalothorax above light yellow, two blackish-brown stripes arise at the posterior eyes and pass caudad and unite at the very indistinct median groove, and a pair of

similarly colored broader stripes arise at the third pair of eyes and, arching backward on the sides, unite dorsally behind the median groove; all these stripes composed of hairs which readily rub off, the thorax elsewhere being hairless; from each eye of the first row a narrow black stripe passes ventrad across the forehead and nearly to the end of the chelicera; there are two small black spots and, most dorsally, a short black stripe on each lateral margin of the head; the region between the second and third eye rows is blackish. *Sternum* yellow with blackish spots on the margins. *Abdomen* above with a broad lancet-shaped mark, margined (especially posteriorly) by black, ending pointed at the middle of the dorsum, this stripe is surrounded on each side by a narrower clear yellow band, these two yellow bands joining just behind the middle and continuing back to the spinnerets as a single median line, and this median yellow line is margined on each side by a blackish stripe; the remainder of the dorsum is yellow or yellowish-brown. Sides of the abdomen streaked with black lines which continue backward to the spinnerets, but do not extend anteriorly beyond the transverse plane of the epigynum. Venter pale yellow or orange, a longitudinal median black mark (with lighter centre) in one specimen, in the other a pair of short parallel longitudinal black stripes, in neither specimen do these black markings extend along the whole extent of the venter behind the epigynum. *Epigynum* nearly black. *Chelicera* and *maxille* pale yellow like the sternum, *labium* darker. *Legs* pale greenish-yellow with black spines, the ventral surface of femora I-III with a longitudinal black line. *Palpi* colored like the legs, but with no black stripe.

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## EXPLANATION OF PLATES XXIX AND XXX.

*All the figures are drawn with the aid of the camera lucida and reduced one-half. All the figures of ♂ palpi exhibit the right palpi from the ventral surface, and in most of them the hairs have been omitted.*

PLATE XXIX, Fig. 1.—*Lycosa nigra* (Stone), type, epigynum.

Fig. 2.—*Lycosa sublata* n. sp., type, epigynum.

Figs. 3, 4.—*Lycosa ocreata pulchra* n. subsp., types, epigynum, ♂ palpus.

Figs. 5, 6.—*Lycosa relucens* n. sp., types, epigynum, ♂ palpus.

Fig. 7.—*Lycosa sepulchralis* n. sp., type, epigynum.

Fig. 8.—*Lycosa charonoides* n. sp., type, epigynum.

Figs. 9, 10.—*Lycosa stonei* n. sp., epigynum, ♂ palpus.

Figs. 11, 12.—*Lycosa verisimilis* n. sp., types, epigynum, ♂ palpus.

Fig. 13.—*Lycosa arenicola* Scud., epigynum.

Fig. 14.—*Lycosa punctulata* Hentz, epigynum.

Figs. 15, 16.—*Lycosa scutulata* Hentz, epigynum, ♂ palpus.

Figs. 17, 18.—*Lycosa cinerea* (Fabr.), epigynum, ♂ palpus.

Figs. 19, 20.—*Lycosa carolinensis* Walck., epigynum, ♂ palpus.

Figs. 21, 22.—*Lycosa inhonesta* (Keys.), epigynum, ♂ palpus.

Figs. 23, 24.—*Lycosa nidicola* Emerton, epigynum, ♂ palpus.

Fig. 25.—*Lycosa baltimoriana* (Keys.), ♂ palpus.

Figs. 26, 27.—*Lycosa lepida* (Keys.), epigynum, ♂ palpus.

PLATE XXX, Figs. 28, 29.—*Lycosa frondicola* Emerton, epigynum, ♂ palpus.

Figs. 30, 31.—*Lycosa purcelli* n. sp., epigynum, ♂ palpus.

Figs. 32-34.—*Pardosa nigropalpis* Em., epigyna, ♂ palpus.

Figs. 35, 36.—*Pardosa minima* (Keys.), epigynum, ♂ palpus.

Figs. 37, 38.—*Pardosa scita* n. sp., types, epigynum, ♂ palpus.

Fig. 39.—*Pardosa solivaga* n. sp., type, epigynum.

Figs. 40, 41.—*Pirata humicolus* n. sp., types, epigynum, ♂ palpus.

Figs. 42, 43.—*Pirata liber* n. sp., types, epigynum, ♂ palpus.

Figs. 44, 45.—*Pirata nigromaculatus* n. sp., types, epig. ♂ palpus.

Fig. 46.—*Pirata elegans* Stone, type, epigynum.

Fig. 47.—*Pirata marzi* Stone, type, epigynum.

Fig. 48.—*Pirata procursus* n. sp., type, epigynum.

Fig. 49.—*Ocyale undata* (Hentz), epigynum.

Fig. 50.—*Dolomedes urinator* Hentz, epigynum.

Fig. 51.—*Dolomedes idoneus* n. sp., epigynum.

Fig. 52.—*Oxyopes salticus* Hentz, epigynum.

Fig. 53.—*Lycosa nigraurata* n. sp., ♂ palpus.